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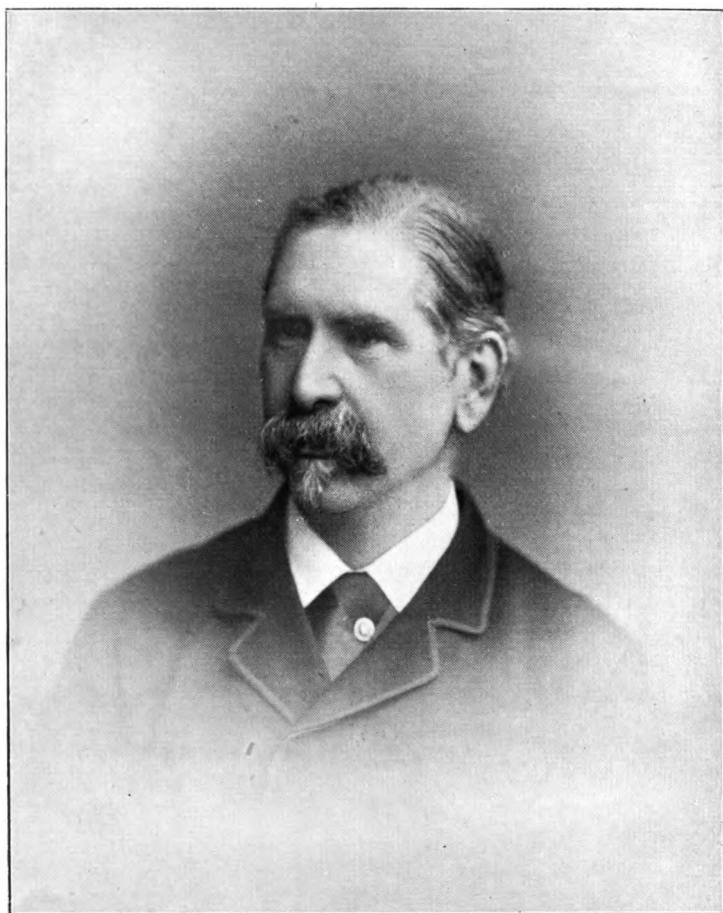
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The Irish Naturalist

A Monthly Journal

OF

GENERAL IRISH NATURAL HISTORY,

ORGAN OF THE

ROYAL ZOOLOGICAL SOCIETY OF IRELAND,
DUBLIN MICROSCOPICAL CLUB,
BELFAST NATURAL HISTORY & PHILOSOPHICAL SOCIETY,
BELFAST NATURALISTS' FIELD CLUB,
DUBLIN NATURALISTS' FIELD CLUB,
CORK NATURALISTS' FIELD CLUB,
LIMERICK FIELD CLUB,
ULSTER FISHERIES AND BIOLOGY ASSOCIATION.

EDITED BY

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AND

ROBERT PATTERSON, F.Z.S., M.R.I.A.

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Edited by T. SHEPPARD, F.G.S., and T. W. WOODHEAD, F.L.S.
MUSEUM, HULL. TECHNICAL COLLEGE, HUDDERSFIELD.

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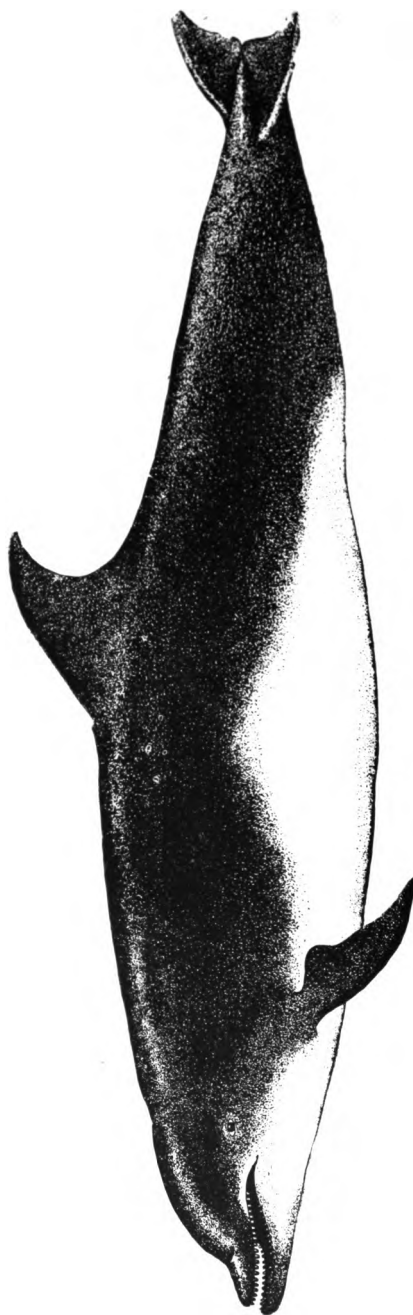
THE DURATION OF FLIGHT AMONG BATS.

BY C. B. MOFFAT.

(Read before the Dublin Naturalists' Field Club, 21 March, 1905.)

I AM not sure that the subject of Bats is of interest to most people, or even to most naturalists; but to me they have always been fascinating animals, and it surprises me to find, from time to time, how very little is known about them. Some years ago attention was drawn by Dr. N. H. Alcock, at that time one of the hon. secretaries of this Club, in a most interesting introduction to a series of articles which he unfortunately has not had time to complete, to the extraordinary dearth of our information about Bats, and particularly about the habits of Bats. For one thing—Are they nocturnal creatures or are they not? We all know that it is their usual practice to come out of their sleeping places a little after sunset, some kinds being rather earlier than others; but Dr. Alcock showed that scarcely anything was known concerning their further movements. He raised the question, "How long do Bats fly?" After setting out on their after-sunset excursions, do they "not go home till morning," or do they just fly while there is enough lingering twilight to guide their entomological pursuits? Surely it was a singular thing that such a question could need to be asked in one of the closing years of a century famous for devotion to zoological research. Yet there was then only one British Bat concerning whose habits anything definite could be stated, and I have reason to believe that only half the truth had been ascertained about it. I refer to the Noctule—a species which happens not to be found in Ireland. The Noctule had been repeatedly seen by various observers returning to its den before the twilight was quite gone; in fact, its whole flight occupied only about an hour. It is, doubtless, well known that the Noctule is a very large Bat—it is the so-called "Great Bat" of Gilbert White's delightful Selborne letters—and in consequence of its superior size it can be seen entering its sleeping place at hours when the Pipistrelle or the Long-eared or the Whiskered Bat would be

A



BOTTLE-NOSED DOLPHIN (*Tursiops tursio*),
from Dublin Bay.

One-twentieth natural size.

C. M'Nab, del.

To face page 121.

BOTTLE-NOSED DOLPHINS IN DUBLIN BAY.

BY R. F. SCHARFF, PH.D., F.L.S.

(PLATE 4.)

WHEN I wrote a short account on the Irish Cetacea¹ five years ago, I mentioned (p. 90) that the only certain record of the Bottle-nosed Dolphin (*Tursiops tursio*) having occurred in Irish waters was that mentioned by Bell, according to whom a specimen had been taken on the south coast in 1829. Mr. M'Cabe, of the South City Markets, in Dublin, informed me, on the 29th April last, that two young whales had been captured the night before in salmon nets set near the mouth of the River Liffey. Mr. Nichols and I went to examine them at once, and identified them as Bottle-nosed Dolphins; clearly the species is of great rarity on the Irish coast.

Both specimens were females, one being 10 feet 6 inches long, and the other a little smaller. They were of a uniformly dark slaty-grey colour above, including the flippers, and underneath of a dirty white. The white colour extended in a narrow strip along about half of the upper jaw, while the anterior portion of the lower jaw was grey. There were forty-two teeth in the lower and forty-six in the upper jaw.

I herewith give a figure of one of the specimens, and may point out at the same time that it differs to some extent from the only other drawing published of an Irish Bottle-nosed Dolphin. The late Dr. Gray had in his possession a drawing made by Robert Templeton of the Irish specimen obtained in 1829, and referred to above. This he reproduced in his paper.² To judge from this drawing, which evidently represents a Bottle-nosed Dolphin, it would seem as if the extent to which the white colour invades the head region is variable. The head is almost entirely white in this specimen. Then, again, in Prof. Flower's figure of the same species,³ the whole of the lower jaw is coloured white.

¹ *Irish Naturalist*, vol ix., 1900, pp. 83-91.

² *Annals of Natural History*, vol. xvii., 1846.

³ *Trans. Zool. Soc. London*, vol. xi., 1885, plate 1, fig. 2.

The Bottle nosed Dolphin resembles the Bottle-nosed Whale in shape, and both belong to the great group of toothed whales, but whereas the latter has only a single pair of teeth in the lower jaw, the former, as we have noticed, possesses a very large number of conical teeth. The distribution of the Bottle-nosed Dolphin is world wide. The Common Dolphin differs from the Bottle-nosed Dolphin in having a much longer beak, smaller and more numerous teeth, while it is unusually variegated in colour for a whale.

It may be of interest to add that Mr. M'Cabe has kindly presented the larger of the specimens referred to to our National Collection; the other has gone to an English museum.

The Museum, Dublin.

IRISH SOCIETIES.

ROYAL ZOOLOGICAL SOCIETY.

Recent gifts include twelve Chaffinches, four Greenfinches, a Goldfinch, eight Redpolls, and three Hooded Crows from Mr. W. W. Despard; and a Badger from Mr. O'Brien. Many animals have been lately acquired by exchange or purchase, including a number of Monkeys and Marmosets, two Dwarf Lemurs, a pair of Black Porcupines, a Bear, and a pair of Racoons, two Ural Owls, a Marabout Stork, and some Pelicans. Three Lion cubs have been born in the Gardens, and four young Lions have been sold and exported to Germany.

The well-deserved honour of an Honorary Vice-Presidency has been conferred on Mr. W. E. Peebles after twenty-five consecutive years' service on the Council. The vacancy thus created has been filled by the co-option of Dr. E. M'Dowall Cosgrave.

DUBLIN MICROSCOPICAL CLUB.

APRIL 12.—The Club met at Leinster House. Dr. R. F. SCHARFF, President, in the chair.

J. N. HALBERT exhibited an uncommon fresh-water mite—*Torrenticola anomala* (Koch)—found in the River Nore, near Thomastown, Co. Kilkenny. The species is very local, occurring in rivers and streams in various parts of Ireland, notably in the Flesk (Killarney), in the Blackwater (Lismore), and in the Tolka, near Finglas, Co. Dublin. It has also been recorded from Scotland.

F. W. MOORE exhibited *Bulbophyllum tremulum*, Wight. This is a very scarce and interesting orchid, a native of India, belonging to the small group in which the labellum bears numerous hairs. In the present instance, a heavy fringe of hairs hangs downwards from the labellum, resembling a beard, these hairs being flat, strap-shaped, and in colour dull red. Slight breaths of air cause these hairs to vibrate, and a strong breeze, sufficient slightly to shake the inflorescence, causes the labellum of each flower, with the attached hairs, to oscillate.

Prof. G. H. CARPENTER showed *Lohmannia insignis*, an Oribatid mite, from Tibbradden, Co. Dublin, recently described as a new species by Prof. Berlese (*Redia*, vol. ii., 1904, pp. 23-4, pl. ii., fig. 41). This mite occurred in numbers, and had proved injurious to bean seedlings in the garden at Tibbradden House, where it was detected by Mr. T. Bell.

D. M'ARDLE exhibited *Peziza granulata*, Bull, a fungus which occurs in considerable quantity on cow-dung, and presents the appearance of scattered grains or seeds. When very young the cup is round; it afterwards expands flatly, is of a fulvous orange colour, and is composed of cylindrical asci containing eight elliptical sporidia, with stout linear paraphyses, club-shaped at the apex, which is full of orange-red granules; these present a beautiful object under the microscope. It is common in Co. Dublin. There is an excellent figure of the plant in Cooke's "Micrographia," page 34. plate 15, fig. 59.

CORK NATURALISTS' FIELD CLUB.

APRIL 11.—ANNUAL MEETING.—The annual meeting was held in the Club rooms, which are now open to members every evening, except Thursday, from 7 to 9.45 o'clock.

The following reports were read and adopted, the treasurer showing a balance in hand of over £9.

THIRTEENTH ANNUAL REPORT—SESSION 1904-5.—The membership of the Club is now fifty-four, including eleven hon. members, as against fifty-eight last year, and also we have eighteen junior members. During the past session, a special effort was made to resuscitate the excursions, which had fallen into abeyance during the Exhibition years. A full programme was arranged, and your secretary issued a special circular, stating that, as far as possible, he would personally superintend them. The result has not come up to our expectations, for while the excursions were fairly attended, many more members should have come, and the practical results might have been more encouraging.

At our last annual meeting our rules were altered so as to facilitate the formation of a junior branch at the nominal subscription of 1s.; this resulted in about twenty joining, principally from the High School; but though several prizes were offered, none were competed for, which is much to be regretted, as it was thought this would encourage collecting and nature-study.

The following series of excursions was arranged, all of which, except that to Innishannon, were held; the Innishannon one, fixed for August Bank Holiday, having to be given up owing to wet weather :—

April 4.—Raffeen to Carrigaline, through a most picturesque and interesting piece of country. April 23.—Lota Lodge, by kind permission of A. F. Sharman Crawford, Esq., J.P., rail to Glanmire and walk back by Bennett's Bog. This was the most largely attended of all, about thirty, chiefly the junior branch, going. May 7.—Waterfall to Ballincollog. May 14.—Drive to Carrignavar and home by Templemichael. May 28.—Rochestown to Monkstown. June 4.—Douglas district. June 8.—Blarney line, getting out at junction and walking back to Leemount; some of the party walked back to Cork. June 25.—Little Island; conducted by Mr. Farrington. August 25.—Kinsale. The weather kept some away, but those who went had a most interesting dredging excursion in the harbour, under Mr. Rohu's guidance, and obtained some interesting marine specimens. September 10.—Raffeen and walk to Currabinny, where the party were kindly entertained to tea by Mrs. John Pickering. September 17.—Rail to Blarney, and walk home by the old road.

The 4th Triennial Conference and excursion under the Field Club Union was held at Sligo, and well attended, though only one of our members, Mr. Charles Baker, was able to go from Cork. An account of this was given as a joint lecture with the Cork Literary and Scientific Society, by R. Lloyd Praeger; it was most interesting, and was fully illustrated by magnificent views taken by R. Welch. The only other lecture so far was on "The Relation of Art to Nature," by your secretary, which was also, by request, given under the same joint auspices.

Mr. Praeger expressed the hope that the 5th Field Club Union Conference of 1907 should be held in Cork. This we hope may be done, as it would prove a great stimulus to local study; but to make it a success, we need to gird up our loins and make much more effort than has been done to ensure practical results.

The most important event of the year is the joining of our Club with the Historical and Archæological Society, and the Scientific Association, in taking the reading-room of the Cork library for the society's use, five evenings in the week from 7 to 10 o'clock. This will take all our funds, and unless it results in greatly increasing the numbers of our membership, the interest in the Club cannot be continued beyond the year. That such may not be, is our sincere hope, after thirteen years of existence, and we urge upon all our members to take more interest in the various meetings, and thus contribute towards their success.

The following officers were elected for the ensuing session :—

President—W. Humble Johnson. Vice-Presidents—Prof. M. Hartog, D.Sc.; Miss Martin, T. Farrington, J. L. Copeman, R. A. Phillips, J. H. Bennett, H. H. Lund. Hon. Treasurer—W. B. Lacy. Hon. Secretary and Curator—Charles Baker. Committee—Miss Porter, F. R. Rohu, W. Miller, J. Noonan, C. Peyton.

BIRDS MET WITH ON CONNAUGHT LAKES.

BY R. J. USSHER.

I HAVE drawn attention in this magazine to the use made of the Shannon and its lakes by migrants and wandering sea-birds when migrating north and south, but another easy route is afforded by the great lakes, Corrib, Mask, and Conn, by which wild fowl can pass from Killala Bay to Galway Bay, and thus cut off the dangerous circuit round the coasts of Mayo and Connemara.

Mr. Warren lives at the northern end of this short cut, and has for over half a century recorded observations, many of which illustrate this migration route. Thus, in October, 1851, and again in October, 1862, remarkable numbers of Skuas, of two species, were seen entering from Killala Bay, and on the latter occasion these birds were immediately afterwards observed in numbers on Tralee Bay.

My own acquaintance with this part of Ireland is limited to summer, so that the species which breed there are more familiar to me than migrants, and I will relate some of my observations made in May and June in different years. Leaving Galway by boat one has to traverse the River Corrib for three miles before reaching the lake, passing through the cut of Menlough. This channel leads through a wide extent of rough, sedgy ground, once a swamp. Here many breeding Curlews performed their favourite exploit of ascending with rapid strokes, and then projecting themselves, with wings stretched out rigidly, and descending like a parachute. Redshanks and Dunlins, which also breed on this lake, perform the same manœuvre in the nuptial season.

Lough Corrib is about thirty miles in length, and has two broad, deep expansions—the rest being a flooded tract of limestone crag, with rocky points and masses of all sizes, either projecting from the surface or barely submerged. Much of this extraordinary basin is so dangerous to navigate that the feathered inhabitants nest undisturbed except by winged enemies. Of these the Marsh Harrier, once a widespread resident, still lingers on the lonely bogs beside the lake, where I have watched it sailing, soaring, and wheeling

at no great height; its wings are often held slanting upwards. The Hen Harrier was also common up to 1872, previously to which it nested on several of the islands towards the north end, but these were sought out and the birds shot. Of all birds of prey the Harriers are the most easy to kill, from their low, deliberate flight.

Among the birds that people the numerous islands of Lough Corrib, the Arctic Tern is most in evidence. Its colonies are dispersed through the central portion of the lake, where a boat is ever in danger of having its bottom pierced by a sunken point of limestone. I have found some nests of Common Tern among those of the Arctic. While both species have been proved by Mr. Warren to breed on Loughs Mask and Carra, I understand that the proportion of *S. fluviatilis* is larger on those lakes. At a point in Lough Corrib, fully eight miles from the Port of Galway, the nearest sea, I saw a pair of Little Terns fishing near an island, and they seemed to be quite at home there. I could see their white foreheads, as they were close to me.

The Black-headed Gull has several colonies on the islands of these lakes, but a more remarkable member of this family, the Lesser Black-headed Gull, breeds on many islands. I have seen as many as four pairs at their nests on adjoining islets or rocks at a shallow, dangerous part of Lough Corrib, where the site chosen was frequently under or in the midst of a willow or other small bush that was open enough for their large nest. Elsewhere on this lake, and on Lough Mask, where islands are largely formed of huge bare boulders, the single nest is placed among these; but on one island that I have not visited, Mr. Warren found twenty nests of the Lesser Black-backed Gull. He also found some scattered nests of the Common Gull on the points and rocky islets of Lough Mask, which seems to be the most inland breeding resort of this bird in Ireland. It also nests on Lough Conn and Lough Cullin, and on an island in the latter lake about thirty pairs were breeding in 1894 (Warren).

In Ireland the Common Gull chiefly frequents in the nuptial season the small islets of freshwater lakes near the western coasts of Donegal, Mayo, and Galway, and the fact that it breeds on some of the great lakes of central Connaught

corroborates the semi-marine character of their bird-life. But, to return to Lough Corrib; nowhere have I seen more Mergansers, sometimes in pairs, sometimes in little bands. In June the females may be found hatching on the islands of all these Connaught lakes, and a favourite nesting-site is in a rank bed of Meadow-sweet, through which the bird makes a tortuous pass from the shore. As the Merganser feeds on fish, it is not incommoded by the rocky nature of the bottom; but this does not seem to suit the Great Crested Grebe, a bird that I failed to meet with on the larger lakes. I met with it, however, on Lough Hackett, a small lake near Headford, which was muddy, and grew flags or rushes.

The islands of Lough Corrib are much resorted to by the Common Sandpiper, and Dunlins are to be seen sometimes in unaccountable little flocks at the height of the breeding-season, sometimes in pairs that seem to have nests.

The Cormorant is to be seen in all directions, one prominent rock, which formed a favourite perch, being well whitewashed. A small colony of Cormorants used to nest (as Mr. Warren informs us) on the ivy-covered walls of an isolated castle in Lough Mask, until storms stripped off the ivy. I have described elsewhere¹ considerable colonies of Cormorants that nest on the trees of lake-islands in Connaught; and on Lough Tawnyard, in Mayo, I counted eighty nests on one side of such an island, on which I found several Herons' nests in tall, straggling Hollies in the interior of the thicket.

Hérons habitually build on Hollies, which often grow to a great size, and on any low trees or bushes available, on the islands of the moorland lakes of the West of Ireland from Donegal to Kerry. In Connemara, a district of bogs and granite mountains, the only attempts at a bush-growth (for one cannot call this trees) is on the islands of the many lakes. Here such species as the Merlin and Hooded Crow resort to breed, and Wood-Pigeons are common. Mr. Witherby found two nests of the latter on the ground among heather on an island in Lough Corrib. This is not so surprising to me, when I remember a Heron's nest on the stony brow of an islet in Lough Ilion, Co. Donegal, and the nest of a Magpie but two feet from the ground, not far from that of the Heron.

¹ *Birds of Ireland*, p. 153.

Sedge Warblers are common on Lough Corrib, and that inevitable bird of the Irish lakes, the Reed Bunting. It seems to breed on every island in many counties. I found a nest well under a boulder on one of the stony islands of Lough Mask. Sand-Martins excavate the escarpment of the boulder-clay that caps several of the islands in these lakes, and they breed in the walls of a ruined castle on Lough Cullin (Warren) ; but the small bird that aroused my interest most was the Yellow Wagtail, which nests extensively on the three lakes, Corrib, Mask, and Cara, chiefly on the islands. I was attracted, by the female leaving it, to one nest containing six eggs, overhung by a stone, among short sedgy grass. In parts of Lough Corrib a pair seems to occupy each island. Mr. W. H. Good, of Westport, informed Mr. Warren and me that this species, so local in Ireland, was to be found breeding on Lough Mask, and our surprise at finding it on these lakes is due to the fact that the only other breeding-ground of the species known in Ireland is on Lough Neagh, in Ulster. This discontinuous distribution in Ireland is paralleled by similar habits of the Yellow Wagtail in the North of England. As a migrant it has occurred at Co. Wexford light-stations, which shows that some at least of this species cross by the Wexford migration-route used by so many of the Passerine birds that visit Ireland.

Before quitting Lough Corrib I may mention that I have found the Brimstone Butterfly (*Gonepteryx rhamni*) on many of the islands in June, as well as on those of the Shannon Lakes.

Of winter migrants to the northern lakes of this chain Bewick's Swan is the most remarkable ; flocks of this fine bird have repeatedly been seen on Loughs Conn and Cullin by Mr. Warren.

The Woodcock, a migrant of more interest to the sportsman, after coming down the Donegal coast, crosses Connaught on its southern journey in large numbers by this line of lakes, where many take up their winter abode. The plantations of Lord Ardilaun at Ashford, on Lough Mask, being carefully preserved, afford a great annual cock-shoot, which has become famous, and in which Royalty has taken part this year. 209 and 211 birds have been killed in one day on different years, while as many as 508 have been shot in six days by seven guns,

Lord Ardilaun has given me to understand that after each spell of severe weather, which drives the cock in from the hills, a smaller number leave the coverts; and thus more birds may be met with in the end of January than at an earlier period of the winter. Some breed at Ashford, and these appear to be increasing, for in the spring of 1902 for the first time a considerable number nested in a valley in the hills. These do not as yet approach the numbers that nest in Co. Wicklow, but as our summer Woodcocks have been steadily on the increase since the first notice in 1833 (Thompson) there can be little doubt that Connaught woods are destined to be more largely used as breeding-quarters.

Among the species that are extending their breeding-range in this country is the Shoveler, whose nest has been repeatedly taken of late years on Lough Conn; and though I have not yet learned that the Tufted Duck frequents that lake, and those to the south of it, in summer, this bird has become so numerous on the Co. Sligo lakes in the breeding-time that its presence at that season further west may be looked for.

The lakes of Sligo and Roscommon form a group rich in bird-life; they comprise Loughs Gill, Arrow, Key, and Gara, some of which have shores and islands adorned with natural wood, and afford some of the most beautiful lake-scenes in Ireland.

The Whinchat, though not a lake-bird, frequents the boggy lands in the neighbourhood of these lakes and the marshy hollows towards Ballymote, being probably more numerous in that district than elsewhere in Ireland. It seems to be absent from the greater part of Munster and Leinster.

The range of the Garden-Warbler includes the wooded shores and islands of Lough Arrow and Lough Key, and I have met with it in song in successive seasons in the same haunts.

The Blackcap has also been identified by its song in Rockingham woods by Mr. Ellison and myself.

Siskins were seen and heard by us in June among the lofty fir-trees in the demesnes of Hazlewood, Markree, and Rockingham. We met with them in family parties, and they evidently breed there, as well as Crossbills, which were observed at the same seasons at Hazlewood and Markree.

The Lesser Redpoll was found nesting near Lough Key, and though its breeding-range in Ireland is a wide one, I notice it here as a species that easily escapes observation.

The ducks which make these lakes their breeding-haunts are numerous. Besides Mallards in abundance, we were entertained by a female Shoveler, which disported herself near our boat with agonized antics to allure us from her brood, in a reedy bay of Lough Key; elsewhere males of this beautiful species were seen on the same lake, having evidently withdrawn from matrimonial cares, as they do when the females are hatching.

The Tufted Duck is the species most in evidence on these lakes, and its increase within recent memory has been marked. New as it is among the breeding birds of Ireland, it had become so numerous on Lough Key in 1896, that at least ten of these ducks might be counted on any part of its waters. The nests are to be found in June on all the islands, and on Lough Arrow we found them in dense clumps of rushes on a grassy peninsula, with cattle grazing between them. The completed clutch was generally covered with a veil of dusky down that concealed the eggs. I visited a similar breeding-ground of the Tufted Duck on an island in Lough Gara in 1901.

Mergansers add conspicuously to this bird-population, and so do the Cormorants, notwithstanding efforts to reduce them in the interests of fishing. I saw thirty of these birds together on a stony island in Lough Key in 1896. They probably represented broods that had quitted neighbouring nests with their parents. On an island in this lake a colony of Cormorants have long bred, in ash trees from 30 to 40 feet high. Their nests here, as on Lough Tawnyard, Co. Mayo, are more compact than the wide, basket-like structure of Herons. We find the four species of *Limicolæ* nesting on the lake-islands—the Ringed Plover, Common Sandpiper, Redshank, and Dunlin—the last chiefly on Lough Gara, where I saw numbers in June inhabiting a long, little-frequented point. I also saw the eggs taken on Inch Island in short herbage near the shore. Redshanks make a lively outcry as they flit round over the intruder, or descend like parachutes to divert attention from their nests.

Of the Black-headed Gull I found dense assemblages breeding on two stony islets in Lough Key, though in 1896 these had been repeatedly robbed of their eggs to feed pheasants. I was interested to watch these gulls chasing moths on the wing over a field near that lake in the evening twilight.

The Lesser Black-backed Gull may be met with on Lough Key in summer. It probably breeds in some lonely bog in the district. Common Terns also nest on the stony islands of all the lakes, and in 1891 I found five nests below the margins of the sod of a very small islet overlooked by the pleasure-grounds at Rockingham. The next time I visited it, the brushwood had overgrown it so much that there was no room for the Terns, but a Tufted Duck nested in the centre.

The Great Crested Grebe breeds on those lakes, on whose waters its quaint form adds variety to the diverse bird population so representative of the woodland, the marsh, and the inland waters, including also species that one expects to find rather on the sea-coast.

On the west side of the Moy estuary, in the County Mayo, a shallow piece of water, with marshy shores, is named Rathroeen Lake. On the single island that this lake contains Mr. Warren discovered a colony of Sandwich Terns breeding in 1858, and they continue to nest there in the midst of a host of Black-headed Gulls, the place being carefully preserved; great numbers of Mallards and Teal breed round the lake, and Redshanks and Lapwings also take advantage of this excellent asylum. Being close to Killala Bay, the Terns have ample fishing-grounds, whence they may be seen flying to the lake with sand-eels in their bills. These fine birds are the feature of interest in the bird-life of the place, only one other colony of Sandwich Terns being known in Ireland, in an Ulster county. They are not merely distinguished from the Common Terns by greater size and breadth of wing, but by their proportions, the large head and shoulders reminding one of the form of a fish, and contrasting with the proportionally short tail and hindquarters. The cry is also very distinctive.

In the month of June, as one views the island from a neighbouring rising ground, its centre seems paved with

white birds, the Gulls far outnumbering the Terns, which frequent the centre.

In 1890 I reached that island by swimming, in spite of the menacing stoops of the crowd of excited Gulls. The bank was overgrown with large sallows, on creeping through which I was confronted by a zone of tall nettles; trampling down these I reached the open space which forms the citadel of the Sandwich Terns. It was strewn with their eggs on what I can only describe as a common floor of nesting material, composed of bits of reed, the nesting hollows in this being very slight. The newly-hatched Terns were not in fluffy down like the young Gulls, which occupied nests all around, and even under the trees and bushes. The coating of the former lay close to their bodies. By this time, 15th June, most of the fertile eggs had evidently been hatched, as those that remained, being mostly single and discoloured, seemed to be addled. We found the caretaker of this lake came at once upon the scene when the birds were disturbed, and without permission of the owner no one is allowed to visit the place.

In north-western Mayo, Lough Carrowmore contains islands on which Cormorants and Herons breed on low trees and bushes, and some of the former nest on the ground among tall weeds. The Common Gull also breeds on the islands of this lake, as it does on many of the small moorland lakes near the coasts of Donegal, Mayo, and Connemara. Its nests are to be found in depressions of the rocky surface, and even perched on isolated rock-masses in these lakes, which are not always in districts deserted by man. The peasant's cottage may overlook a lake where Herons and Gulls are nesting on islets in full view, but these are no more disturbed than a rookery would be in other counties.

Before Eagles of both species were so widely exterminated in Ireland, there were instances in which they nested on low trees or bushes on lake-islands in the bogs of western Connaught.

The number of Herons that breed on some of the islands of Connemara lakes is surprising. On Lough Bolard, in Connemara, seventy Herons, old and young, were killed on one occasion, and many dozens of eggs taken. I visited it in

June after this raid had been made, and found the eggs and nestlings of second clutches in the huge open nests. These were in Hollies, which grow there into trees of considerable size, being evidently of great age. All that district, from Clifden along the southern margin of Co. Galway, is full of Herons, which are met with on the creeks and loughs, and seem to replace the Rook in abundance. Of course there are no stately trees for them to breed in, but that is quite unessential, as isolated bushes in a bog-lake suit them as well.

The Hooded Crow builds in similar positions, and the Kestrel uses the old nest when deserted by the Crow.

The two small lakes of Termoncarra and Cross in the Mullet are favourite resorts of Bewick's Swan in winter, and in hard seasons large flocks of these birds may be seen there, and fly from one lake to the other. In ordinary seasons they occur in small parties, but from November, 1892, to February, 1893, upwards of a thousand were to be seen daily for weeks, as the late Dr. Burkitt informed me. Numbers of wild fowl of other species are said to frequent those lakes, and on or near them the Snow Goose has more than once occurred; while the Greenland Falcon has been repeatedly taken in that district, notably in the spring of 1905.

Cappagh, Co. Waterford.

NOTES.

BOTANY.

***Thuidium delicatulum* Mitt. in Co. Dublin.**

I found this rare moss on the sandhills at Malahide last spring (1904) when botanising there with Mr. D. M'Ardle. It has been found twice before in Ireland, in Co. Derry and Co. Down, in similar localities by the sea, and should be looked for in suitable places inland.

C. H. WADDELL.

Saintfield.

A 4

ZOOLOGY.

Notices of Irish Mollusca.

The current (April) number of the *Journal of Conchology* contains a note by Chas. Oldham on the findings of *Vallonia excentrica*, Sterki, at Mornington, Co. Meath, by P. H. Grierson, and a note by R. Welch on fresh-water shells in masses in shell-marl, and one by Miss Massy on the opercula of *Bythinia tentaculata*.

Birds of the Skelligs.

One of the keepers of the Skelligs lighthouse (Mr. R. James) tells me that in March last they shot three Greenland Falcons and saw a great number of Little Auks round the rock. One of the Falcons was devouring an Auk when it was shot. I believe the Falcons were sent to Messrs. Williams, Dame-street.

MAUD J. DELAP.

Valencia.

White Wagtails at Bartragh,

The White Wagtails (*Motacilla alba*) paid their usual spring visit to the island during the prevalence of the fresh northerly winds of the three weeks preceding May 10. They were first observed about the 25th April, when four or five birds were seen at the usual haunt. These remained all that week, and early the next were joined by others, making up the number to eight, the entire flock remaining until the 6th May, when the wind changing to the south, they left the island before 11 o'clock. However, to replace those, four others arrived that evening, and probably will be joined by fresh arrivals if northerly winds prevail.

ROBERT WARREN.

Moyview, Ballina.

Corncrakes in Winter.

In the *Irish Naturalist* for May Mr. R. Patterson notes the shooting of a Corncrake near Lurgan on the 31st January, by a man who was attracted by the sound of its craking. It is to be hoped that the specimen has been preserved, for surely a Corncrake that has craked in January is deserving of the highest position in the local museum.

On the 19th February a Corncrake was seen by two gentlemen near Belfast as it crossed the road before them—another strange time of year for Corncrakes to be about—but then in explanation of their wanderings, we are told (what is very evident) that neither of these birds were hibernating. This of course is quite satisfactory to those who believe in the hibernating birds.

ROBERT WARREN.

Moyview, Ballina

Unnecessary Bird Killing.

I do not think that Mr. Nevin H. Foster's protest, under the above heading (p. 96), against the killing of a Glaucous Gull is altogether called for. This species runs no risk of having its numbers seriously, or even appreciably, reduced by the shooting of individuals that have straggled in winter to spots so far away from their breeding quarters as Ireland; and though it may be pleasanter to read of their being spared than killed, it might surely be left to a trained naturalist and life-long student of the Gull family like Mr. Warren, to judge for himself how many specimens it would be desirable for him to secure. In the case of the Glaucous Gull, and, indeed, of most Gulls, a very considerable number would be necessary to illustrate the different phases of plumage: and it is impossible to lay down a satisfactory hard-and-fast rule as to where the line should be drawn.

C. B. MOFFAT.

Dublin.

Iceland Gull in the Moy Estuary.

I have been much amused by Mr. Nevin H. Foster's attack on me in the April number of the *Irish Naturalist*, for shooting the Glaucous Gull recorded in the March number. I now have the pleasure of informing him, and other naturalists, that on April the 26th, I shot a very fine specimen of the Iceland Gull as it was swimming in the water near one of my fields here, in company of a young Herring Gull. It is very white in colour, being in the last season's stage of the immature plumage, this very peculiar white colour being common to both the Glaucous and Iceland Gulls of the same age. Its dimensions were:—Length, 21½ inches; carpus, 16 inches; tarsus, 2 inches; while its closed wings extended 2½ inches beyond the end of the tail feathers.

ROBERT WARREN.

Moyview, Ballina.

Supposed Wild Cat in Ireland.

I do not expect that Dr. Scharff will ever succeed in obtaining an Irish killed specimen of a Wild Cat, no more than one of *Mustela vulgaris*: though quite as grave statements of captures have been made from time to time, yet up to the present no specimen has been produced of either animal for inspection by competent naturalists.

Mr. Thompson never got one, neither did Dr. Ball nor Dr. Harvey, and we thus have our three greatest Irish naturalists of the north, middle, and south of Ireland, never seeing or obtaining a specimen of either animal during their long years of enquiry and observation.

There is no doubt that the Domestic Cat when wild-reared for several generations grows to an abnormal size and strength, almost rivalling its wild relative, and when with its dense coat of thick coarse fur, and of the true wild colour, it is easily mistaken by ordinary observers for a true Wild Cat.

I have myself trapped, and seen shot, old male specimens that were nearly twice the size and weight of the house cats, and one, that was of the wild colour and markings, only for his pointed tail, might easily have been mistaken for a true *Felis catus*.

Since Mr. Thompson's time, and that of his fellow naturalists, the trapping of rabbits has become so general all over Ireland, that scarcely a rabbit burrow anywhere has been untrapped, and when this has been the case, without specimens of either Wild Cat or Weasel being forthcoming, I do not see the slightest probability of either animal ever being obtained. Surely, the single instance of the finding of semifossil bones of a cat in a Co. Clare cave does not prove the Wild Cat to be a native of Ireland; something more will be required to prove it to Irish naturalists.

In proof of how easily persons may be mistaken, I may state that lately in the Dublin Museum there was a specimen of a wild reared domestic cat, of the wild colour and markings, sent to me by an English naturalist as a Wild Cat received by him from Ireland.

I do not think that the old fisherman's story to Mr. de Vismes Kane, as related by Mr. Welch in this month's *Irish Naturalist*, need be taken seriously, for if Wild Cats are so numerous as stated on the banks of Lackagh, in such a wild uninhabited district, where probably no trapper ever laid a trap, some remnants of the race must be yet in existence.

ROBERT WARREN.

Moyview, Ballina.

[Reference to Dr. Scharff's paper will show that the bones discovered in the Clare cave do not belong to *Felis catus* but to a distinct South European Wild Cat. It is of course this latter species which Dr. Scharff thinks may possibly still survive in remote corners of Ireland, and being externally much more like the Domestic Cat than *F. catus* is, it is the more likely to be overlooked. We disagree with Mr. Warren that Irish naturalists will not be content to accept this most interesting addition to our mammalian fauna on the evidence of Dr. Scharff's discovery, as it seems to us that no better evidence can be brought forward of the recent occurrence in any country of a particular animal than the existence of its bones in a sub-fossil condition.—Eds.]

IRISH CRUSTACEA OSTRACODA.

BY CANON A. M. NORMAN, M.A., D.C.L., LL.D., F.R.S., F.L.S.

THE object of this paper is to bring together all that is known respecting the representation of the order of Crustacea called Ostracoda in the Irish fauna.

The great extent of fresh water in Ireland ought to make that country very rich in species of Entomostraca which are not marine; but very little has been done among the fresh-water forms, although that little has brought to light species which have hitherto escaped detection elsewhere in the British Isles. It may be hoped that the publication of this list will induce some young naturalists in Ireland to take up this interesting study.

In recording habitats, I have given my own authority for some habitats where the species has been also found by other observers; because in thus acting I am giving confirmation to the record of localities already mentioned in Prof. Brady's and my monograph. I have looked through a great deal of material which I had not had time to examine when that monograph was published. This material has been for the most part collected by myself; but the Youghal sand was given me by my late friend, Dr. Jeffreys; the Aran sands were collected by the late Mr. George Barlee, and the Lough Foyle material gathered by the late Mr. Edward Waller.

The following publications have reference to Irish Ostracoda; and in the monographs are to be found very numerous Irish records, which are embodied in this paper:—

1. BRADY, G. S.—A Monograph of the Recent British Ostracoda. *Trans. Linn. Soc.*, vol. xxvi., 1868, p. 353.
2. BRADY, G. S., and D. ROBERTSON.—Notes on a Week's Dredging in the West of Ireland. *Ann. and Mag. Nat. Hist.*, ser. 4, vol. iii., 1869, p. 353.
3. BRADY, G. S., and D. ROBERTSON.—Contributions to the study of the Entomostraca. VI. On the distribution of the British Ostracoda. *Ann. and Mag. Nat. Hist.*, ser. 4, vol. ix., 1872, p. 48.
4. MALCOMSON, S. M.—Recent Ostracoda of Belfast Lough. *Proc. Belfast Nat. Field Club*, Appendix 1884–1885, p. 259.
5. MALCOMSON, S. M.—List of Ostracoda, in Haddon, &c.: First Report of the Marine Fauna of the South-west of Ireland. *Proc. Roy. Irish Acad.*, ser. 2, vol. iv., 1886, p. 632.

6. BRADY, G. S., and A. M. NORMAN.—Monograph of the Marine and Freshwater Ostracoda of the North Atlantic, and of North-western Europe—Section I. Podocopa. *Trans. Roy. Dubl. Soc.*, ser. 2, vol. iv., 1889, p. 63; and Part 2, Section ii.-iv. Myodocopa, Cladocopa, and Platycopa. *Ibidem*, vol. v., 1896, p. 621.
7. SCHARFF, R. F.—A list of Irish Ostracoda, compiled from Brady and Norman's Monograph. *Irish Naturalist*, 1897, p. 74.
8. BRADY, G. S.—Copepoda and other Crustacea taken in Ireland, and on the N.E. coast of England. *Nat. Hist. Trans., Northumberland, Durham, and Newcastle-upon-Tyne*, vol. xiv., 1902, p. 54.
9. BRADY, G. S.—List of the Ostracoda collected by Mr. George Murray, F.R.S., during the Cruise of the "Oceana" in 1898. *Ann. and Mag. Nat. Hist.*, ser. 7, vol. xii., 1903, p. 337.

I have taken the following excursions in Ireland. (I only mention those, or those parts of excursions, where I collected material for Ostracoda):—

- 1858. Bantry and Glengarriff.
- 1868. Belfast and Strangford Lough.
- 1870. Valentia, dredging in company with my friend, Mr. Edward Waller, in Dr. Gwyn Jeffreys' yacht "Osprey." Dr. Jeffreys was unable to be with us.
- 1874. Westport and Roundstone, in company with my friend, Dr. D. Robertson.
- 1900. Clifden and Connemara, and subsequently counties Clare and Monaghan, in company with my friend, Mr. W. F. de Vismes Kane.

In 1885, with the very kind help of a gentleman in the neighbourhood, I employed two men for a week to use the trowel and dredge in Lough Neagh. My chief object was, if possible to find *Mysis relicta*, which I had sought for in vain in some of the largest lakes of Scotland. Amidst an enormous amount of plankton material was a single specimen which proved the presence of that *Mysis* in Ireland. It has since been taken in the same lough in abundance by Mr. Kane and others, and also in Lough Erne.

The present catalogue gives a larger number of marine Ostracoda than are found on the coasts of either England or Scotland. The deep water off the west of Ireland affords that country great advantages, which must increase more and more as the investigation of its deep-sea fauna is carried on more thoroughly.

The nomenclature employed is that of Professor Brady and my monograph, unless otherwise noted.

OSTRACODA.

Section I.—PODOCOPA.

Fam. I.—CYPRIDÆ.

Genus I.—*Cypria*, Zenker.

- Cypria opthalmica*** (Jurine).—No doubt common everywhere, as I have found it to be in the counties Antrim, Meath, Monaghan, Fermanagh, Mayo, Galway, and Clare.
- C. exsculpta*** (S. Fischer).—Lough Neagh (A.M.N.), contained in B. and R.'s¹ list of species of Galway and Mayo.

Genus 2.—*Cyclocypris*, Brady and Norman.

- Cyclocypris lævis*** (O. F. Müller).—Lough Neagh (A.M.N.); Lough Erne (Kane!); Grand Canal, Dublin, and counties Galway and Mayo (B. and R.).
- C. serena*** (Koch).—Ballyvaughan, Co. Clare; Braggan, Cornacassa, and Drumreask, all near Monaghan (A.M.N.); Loughs of Mayo and Galway (B. and R.).
- C. globosa*** (G. O. Sars).—Ballinahinch and Clifden, Co. Galway; mountain tarn at Braggan, near Monaghan; Cregduff Lough, Roundstone (A.M.N.).

Genus 3.—*Cypris*, O. F. Müller.

- C. virens*** (Jurine).—Belfast (A.M.N.).
- C. incongruens*** (Rambohr).—Belfast (A.M.N.), Isle of Aran (Inishmore), Co. Galway (G.S.B.).
- C. pubera***, O. F. Müller.—Mr. W. F. de V. Kane sent me specimens of this species for examination, which he had taken in Lough Neagh. Dr. G. W. Müller has instituted a new subgenus *Eurycypris* with this species as the type. This cannot stand, for while most of the other species which O. F. Müller included in his genus *Cypris* have been assigned subsequently to other genera, *Cypris pubera* has been left as the type, and with especial propriety, since it was the first species of those ranged under *Cypris* in his *Zool. Dan. Prodrömus*.
- C. reticulata***, Zaddach.—Ireland (G.S.B.).
- C. fuscata***, Jurine.—Ireland (G.S.B.) This and the last species are entered in the Irish column, p. 250, of Prof. Brady's and my Monograph; I do not remember on what authority, but conclude that it was that of Prof. Brady.

¹ Here, and throughout, used as the initials of Brady and Robertson.

Cypris bispinosa, Baird.—When Mr. E. Waller and I were together at Valentia in 1870 he brought me some living examples of this splendid species, which he had procured in a small pond, which I think was on an island in the harbour. The types described by Baird were from North Africa, where it has since been again found. Very many years ago the late Dr. Lukis gave me some examples which he had taken in Guernsey. Judging from its known habitats it would seem to be a species which likes a little taste of salt in the water which it inhabits.

Genus 4.—**Cyprinotus**, G. S. Brady.

Cyprinotus prasinus (S. Fischer).—The *Cyprinotus salinus* of Brady is undoubtedly a synonym of Fischer's species. That author found his types at Palermo in Sicily, where I have myself taken the species in the Botanic Gardens. *Cyprinotus prasinus*, *Cypridopsis aculeatus*, and *Cytheridea torosa* are three Ostracoda which, although found also quite inland, seem to prefer water not far from the sea which has some slight admixture of salt; and *Cypris incongruens* may perhaps be associated with them. They must not, however, be classed with denizens of such brackish water as is the home of *Hydrobia ventrosa*, *Alderia modesta*, *Palamonetes varians*, *Neomysis vulgaris*, *Spheroma rugicauda*, *Idotea viridis* Slabber (= *I. salinarum* Dollfus), *Corophium grossipes*, *Lexoconcha viridis*, *Cytherura gibba*, many Copepoda, and of Foraminifera, *Nonionina depressula*, and *Polystomella striatopunctata*, all of which species are peculiarly typical of brackish water, and are found neither in absolutely salt nor in absolutely fresh water. Ballyvaughan, Co. Clare; Newport, Co. Mayo; and in a locality far inland, a mountain tarn at Braggan, Co. Monaghan (A.M.N.).

Genus 5.—**Herpetocypris**, Brady and Norman.

Herpetocypris reptans (Baird).—Lough Neagh (A.M.N.); Lough Erne and Achill (Kane!); Loughs in Mayo and Galway, and Grand Canal, Dublin (B. and R.).

H. tumefacta (Brady and Robertson).—Cornacassa near Monaghan (A.M.N.).

Genus 6.—**Ilyodromus**, G. O. Sars.

Ilyodromus olivaceus (Brady and Norman).—Mr. de Vismes Kane sent to me for determination specimens taken in Upper Lough Erne.

Genus 7.—**Plonocypris**, Brady and Norman.

Plonocypris vidua (O. F. Müller).—Lough Neagh, Cregduff Lough near Roundstone, and many places near Monaghan (A.M.N.); Loughs in Mayo and Galway, and Grand Canal, Dublin (B. and R.).

P. obesa, Brady and Robertson.—Belfast and Mullingar canals, and Loughs in Mayo and Galway (B. and R.) I believe that this must be united with the last, but Prof. G. O. Sars keeps them distinct.

Genus 8.—*Cypridopsis*, G. S. Brady.

Cypridopsis aculeata (Costa).—I found this in abundance in company with *Cyprinotus prasinus* in slightly brackish water at Ballyvaughan, Co. Clare; also in company with the same species in a mountain tarn at Braggan near Monaghan; and I have also taken it at Newport, Co. Mayo.

C. villosa (Jurine).—This species is included in B. and R.'s list of the species of Mayo and Galway, and Dr. Malcomson found it washed down into the sea at Belfast.

C. Newtoni, Brady and Robertson.—Rossmore, Co. Monaghan (A.M.N.).

C. variegata, Brady and Norman.—In a small pond on the east side of Lough Neagh through which a stream of spring water runs into the lough; also in Lough Neagh canal (A.M.N.).

Genus 9.—*Potamocypris*, G. S. Brady.

Potamocypris fulva, G. S. Brady.—River Liffey at Dublin, and "West of Ireland" (G.S.B.).

Genus 10.—*Aglala*, G. S. Brady.

Aglala complanata, Brady and Robertson.—Low water, Ballyvaughan, Co. Clare, and Birturbuy Bay (A.M.N.); Westport Bay in four fathoms (B. and R.) This species has not yet been found on the coasts of Great Britain.

Genus 11.—*Paracypris*, G. O. Sars.

Paracypris polita, G. O. Sars.—Aran, Dingle Bay, Killary Bay (A.M.N.); tide marks, Island Magee, Co. Antrim (Malcomson).

Genus 12.—*Notodromus*, Lilljeborg.

Notodromus monacha (O. F. Müller).—Newport, Co. Mayo, and in two places near Monaghan (A.M.N.); Coolbarreen Lough, Mayo (B. & R.).

Genus 13.—*Candona*, Baird.

Candona candida (O. F. Müller).—I have seen this common species from the counties Antrim, Monaghan, Clare, and Galway.

Var. **claviformis**, Brady and Norman.—Lough Neagh, sent to me by Mr. Kane.

C. elongata, Brady and Norman.—The types, and as yet only known examples, were found in a gathering taken from the bottom of Lough Neagh in 1885 (A.M.N.).

C. compressa (Koch).—Brady, in his monograph, writes: "A single valve, belonging apparently to this species, occurred amongst Ostracoda found by Dr. Alcock in shell-sand from Roundstone."

C. fabaeformis (S. Fischer).—Coolbarreen Lough, Mayo (B. & R.).

C. lactea, Baird.—Lough Neagh (A.M.N.); Drumreask, near Monaghan (Kane).

Genus 14.—**Candonopsis**, Vavra.

[Vavra, Monographie der Ostracoden Böhmens, 1891, p. 54, and G. W. Muller, Zoologica. Deutschlands Süßwasser Ostracoden, 1900, p. 37.]

Candonopsis Kingsleii (Brady and Robertson).—Ballynahinch, Co. Galway (A.M.N.); Brady also includes it in his list of the species of Mayo and Galway.

Genus 15.—**Ilyocypris**, Brady and Norman.

Ilyocypris Bradii, G. O. Sars.—Ballyvaughan (A.M.N.).

Genus 16.—**Pontocypris**, G. O. Sars.

Pontocypris mytiloides (Norman).—Valentia, Aran, Birturbuy and Westport Bays, Lough Foyle, Strangford Lough (A. M. N.); Clifden Bay (B. & R.); Bantry Bay, and off the Maidens Lighthouse, Co. Antrim (S. M. M.).

P. trigonella, G. O. Sars.—Valentia, Aran, Birturbuy Bay, Westport, Ballyvaughan, Co. Clare (A. M. N.); Clifden and Dublin (B. & R.); Rockport, Co. Down (S. M. M.).

P. hispidula, G. O. Sars.—Birturbuy Bay (B. & R.). The only other known habitat in our fauna is Shetland, whence I recorded it in 1868.

P. acupunctata, G. S. Brady.—Valentia (A. M. N.); in shell-sand, Roundstone (Dr. Alcock). This is a very rare species.

Genus 17.—**Anchistrocheles**, Brady and Norman.

Anchistrocheles acerosa (G. S. Brady).—Off the Maidens Lighthouse in 60 fathoms; east of the Gobbins, 60 fathoms; and off Black Head in 75 fathoms, all off the Antrim coast (S. M. M.). This is a very rare species, and where found is, as far as our observations go, numerically very scarce.

Genus 18.—**Argilloecia**, G. O. Sars.

Argilloecia cylindrica, G. O. Sars.—Valentia, Aran, Roundstone, Lough Foyle (A. M. N.); Clifden and Birturbuy Bays (B. & R.); Bantry Bay, off the Antrim coast, and in Belfast Lough (S. M. M.).

Fam. II.—**BAIRDIIDÆ**.Genus 1.—**Bairdia**, M'Coy.

Bairdia inflata, Norman.—Valentia, Westport, Larne (A. M. N.); Birturbuy Bay, in 10-15 fathoms (G. S. B.); Aran and Galway Bay (Prof. Rowney); Berehaven, 4 fathoms; off Antrim coast in 10-62 fathoms, and in Belfast Lough (S. M. M.).

Bairdia hirsuta, G. S. Brady.

1880. *Bairdia hirsuta*, G. S. Brady, Report "Challenger" Exped. Ostracoda, p. 50, pl. viii., figs. 3 a-d.

Two specimens, which exactly agree with the above description and figures, were taken by the "Porcupine" Expedition of 1869, station 20, lat. $55^{\circ} 11' N.$, long. $11^{\circ} 31' W.$, to the west of Donegal, in 1,443 fathoms. The "Challenger" specimens were dredged in the South Atlantic in 1,375 and 1,825 fathoms (A. M. N.).

B. subdeltoides (? Münster), T. R. Jones.

1856. *Bairdia subdeltoides*, T. R. Jones, Mon. Tertiary Entom. *Paleont. Soc.*, p. 52, pl. iv., 2, 2a.

1894. ? *Bairdia decipiens*, G. W. Müller, Fauna und Flora des Golfes von Neapel—Ostracoden, p. 269, pl. xiii., fig. 29; pl. xiv., figs. 10, 21, 22.

A single valve dredged in 1869 by the "Porcupine," station 19, lat. $56^{\circ} 11' N.$, long. $10^{\circ} 56' W.$, in 1,366 fathoms, exactly agrees with the figure of Prof. T. Rupert Jones, to which I have above referred. Of the various species described by Brady and by Müller, it seems to come nearest to *B. decipiens*, Müller. The *Bairdia* are a very difficult group. The sexual differences would seem to be considerable, and the difficulty is increased by the difference in form of the two valves, and of the variation of outline at different periods of development.

Genus 2.—**Macrocypris**, G. O. Sars.

Macrocypris minna (Baird).—Dredged by the "Porcupine," 1869, station 3, in the ocean west of Bantry, lat. $51^{\circ} 38' N.$, long. $12^{\circ} 50' W.$, in 722 fathoms. The only other British locality is off Shetland, where it was dredged first by Mr. M'Andrew, and subsequently in two different years by myself (A. M. N.).

M. siliquosa, G. S. Brady.—"Porcupine," 1869, station 19, a broken but unmistakable part of a valve, lat. $56^{\circ} 11' N.$, long. $10^{\circ} 56' W.$, that is, to the west of Donegal, in 1,366 fathoms (A. M. N.).

Genus 3.—**Bythocypris**, G. S. Brady.

B. obtusata, G. O. Sars.—Off the Antrim coast, in 60 fathoms (S. M. M.).

Fam. III.—**DARWINULIDÆ.**Genus 1.—**Darwinula**, Brady and Robertson.

Darwinula Stevensoni, Brady and Robertson.—Cregduff Lough, Roundstone (A. M. N.); Loughs Inagh, Corrib, Agraftard, Arddery, and Mesarähoge, in Connemara (B. & R.)

Fam. IV.—CYTHERIDÆ.

Genus 1.—**Metacypria**, Brady and Robertson.

Metacypria cordata, Brady and Robertson.—This interesting fresh-water species has been taken by B. and R. in Coolbureen Lough, Co. Mayo, and Lough Aubree, Galway.

Genus 2.—**Cythere**, O. F. Müller.

Cythere lutea, O. F. Müller.—Bantry, Valentia, Ballyvaughan, in Co. Clare, Aran, Clew Bay (A. M. N.); Birturbuy and Dublin Bays (B. & R.); Antrim coast and Belfast Lough (S. M. M.)

C. cyamos, Norman.

1865. *Cythere viridis*, G. O. Sars—Oversigt af Norges Marine Ostracoden. Vid. Selsk. Forhand, p. 30.

1868. *Cythere viridis*, G. S. Brady.—Mon. rec. Brit. Ostrac., *Trans. Linn. Soc.*, vol. xxvi., p. 397, pl. xxviii., figs. 40-41, and 57-59, pl. xxxviii., fig. 8.

I had for some time thought that this was the young of *C. lutea*, and it is true that the young of the latter species is very like *C. cyamos*, yet it has not quite the same form. Sars referred this species to the *Cythere viridis* of Müller, but I regard Müller's species as that which Prof. Brady used to name *Loxoconcha elliptica*.

Newcastle, Co. Down (Brady); Berehaven, 4 fathoms (S. M. M.).

C. confusa, Brady & Norman.—Bantry, Valentia Harbour, Dingle Bay, Aran, Clew Bay, Lough Foyle, Strangford Lough (A. M. N.); Dublin, Clifden, and Birturbuy Bays (B. & R.); Berehaven and Belfast Lough (S. M. M.). This is *C. pellucida* of Brady's monograph. I do not quote localities given in that work, as at the time when it was published several species were confused with this.

C. pellucida, Baird.—Valentia, Westport, Lough Foyle (A. M. N.); Clifden Bay (B. & R.); Dublin Bay and Belfast canal (G. S. B.); Belfast Lough and off Black Head, Co. Antrim, 15-18 fathoms (S. M. M.).

C. porcellanea, G. S. Brady.—Valentia, Aran, Westport (A. M. N.); Belfast Lough (S. M. M.).

C. macallana, Brady and Robertson.—Ballyvaughan, Co. Clare, tide marks at Aran, Westport (A. M. N.); Dublin Bay, Clifden Bay, 3-5 fathoms, and Birturbuy Bay (B. & R.); Belfast Lough, tide marks (S. M. M.).

C. tenera, G. S. Brady.—Valentia, Dingle Bay, Aran, Lough Foyle (A. M. N.); Dublin and Birturbuy Bay (B. & A.); coast of Kerry and Belfast Lough, tide marks to 60 fathoms (S. M. M.).

C. semipunctata, G. S. Brady.—Aran, Birturbuy Bay, Westport (A. M. N.); Mulroy Bay (B. & R.); Antrim coast and Belfast Lough (S. M. M.).

C. badia, Norman.—Bantry, Aran, Roundstone Bay (A. M. N.); Westport (B. & R.); Antrim coast and Belfast Lough (S. M. M.).

Cythere crispata, G. S. Brady.—Valentia, Aran, Roundstone, Westport (A. M. N.); Dublin, Clifden, and Birturbuy Bays (B. & R.); Berehaven, Antrim coast, and Belfast Lough, tide marks to 60 fathoms (S. M. M.).

C. cribrosa, Brady, Crosskey, and Robertson.—Dr. Malcomson records a single specimen of this species as having been found by him at Rockport, Co. Down. This is the only instance of *C. cribrosa*, which was described as a fossil of the post-tertiary beds, being found recent. When we remember that off Belfast the dredge brings up arctic post-tertiary Mollusca which no longer live in our seas, but which have a remarkably recent appearance, it is possible that the specimen found by Dr. Malcomson may have been washed out of the same sub-marine strata.

C. sulcifera, Brady and Norman.—“Porcupine,” 1869, station 19, east of Donegal, in 1,360 fathoms. The type and only known specimen.

C. gibbosa, Brady & Robertson.—A brackish water species. Newport and Westport, Co. Mayo (A. M. N.); Roundstone, Mulroy Bay, canal at Belfast (B. & R.); Dundrum (G. S. B.); Rockport, Co. Down, and off the Maidens Lighthouse in 60 fathoms (S. M. M.). The specimen in this last locality must have been washed out to sea.

C. rubida, G. S. Brady.—I found this species in 1902, living at low water, at Ballyvaughan, Co. Clare. This widely extends our knowledge of its distribution in our seas. All previous examples had occurred in the Clyde district, the second Irish locality being between tide marks, Rockport, Co. Down (S. M. M.); and the remaining two habitats are both in the Firth of Clyde itself—namely, Lamlash Bay, where I took the type specimens in 1854, and the Isle of Cumbrae, where it was found by the late Dr. D. Robertson. It occurs in Norway, and was described by Professor G. O. Sars under the name *Cythere drammensis*.

C. albomaculata, Baird.—Youghal, Valentia, Dingle Bay, Bantry, Ballyvaughan, Aran, Roundstone, Lough Foyle, Strangford Lough (A. M. N.); Dublin, Clifden, and Birturbuy Bays (B. & R.); Newcastle, Co. Down (G. S. B.); Antrim coast and Belfast Lough (S. M. M.).

This species is abundant in rock-pools all round our coast. Northwards, in Norway, it would seem to be very scarce, as Professor Sars had not met with it; but I took a few specimens at Lervig, in the Hardanger Fiord. To the south it is not recorded in Dr. G. W. Müller's fine work on the Mediterranean Ostracoda. Nevertheless it would seem to be a southern form, since I found it to be common in rock-pools at Madeira in 1897.

C. Robertsoni, G. S. Brady.—Bantry, Aran, Westport (A. M. N.); Roundstone (Robertson in Mus. Nor.); Dublin (B. & R.); Berehaven, entrance Bantry Bay; 40 fathoms off Antrim coast, and in Belfast Lough (S. M. M.).

- Cythere convexa**, Baird.—Youghal, Valentia, Dingle Bay, Ballyvaughan, Aran, Clew Bay, Strangford Lough (A. M. N.); Cork (C. E. Davison); Dublin, Roundstone, and Birturbuy Bays (B. & R.); Berehaven, Antrim coast, and Belfast Lough (S. M. M.). A species of wide range from tide marks to a considerable depth.
- C. marginata**, Norman.—Birturbuy Bay (B. and R.); four miles E. of the Gobbins. Antrim, in 60 fathoms (S. M. M.).
- C. Jeffreysii**, G. S. Brady.—Roundstone in shell-sand (Dr. Alcock); Birturbuy Bay in 10-15 fathoms (B. & R.).
- C. limicola**, Norman.—Off S.W. Ireland, in 110 fathoms; one mile off the Gobbins, Antrim, in 15-18 fathoms, and Belfast Lough, 6-10 fathoms (S. M. M.). This I have myself only met with in deep water.
- C. cuneiformis**, G. S. Brady.—Aran (A. M. N.); shell-sand from Galway (Prof. Rowney); Roundstone Bay, 2-3 fathoms (G. S. B.); Dublin and Westport Bays (B. & R.); off Antrim coast and in Belfast Lough, down to 60 fathoms (S. M. M.).
- C. navicula**, Norman.—Roundstone and Birturbuy Bays, Larne (A. M. N.); Berehaven, Antrim coast, and Belfast Lough, tide marks to 60 fathoms (S. M. M.).
- C. globulifera**, G. S. Brady.—Off Valentia, 112 fathoms (A. M. N.); Roundstone, in shell-sand (G. S. B.); S.S.E. of Maidens Lighthouse on Antrim coast, 72 fathoms, and off the Great Skellig, Co. Kerry (S. M. M.).
- C. cluthæ**, Brady, Crosskey, and Robertson.—Dr. Malcomson wrote of this very rare species—"Although rare, this species appears to be generally distributed in the deeper water." The localities in which he found it were off the Antrim coast, in 60-72 fathoms, 2-5 miles S.E. of the Maidens Lighthouse, and half a mile off Coalpit Bay, in 13 fathoms; also off White Head in Belfast Lough, in 10-18 fathoms. The only other known locality in our seas is Loch Fyne, where it was taken by Dr. Scott, in about 20 fathoms. It is an Arctic form. In Nares' Arctic Expedition it was dredged in 80 fathoms off Cape Frazier; and in 1890 I dredged it living in two localities in East Finmark, viz., in the Varanger Fiord, in 125-150 fathoms, and in Bög Fiord, in 20-30 fathoms.
- C. pulchella**, G. S. Brady.—"A great many somewhat dwarfed specimens, apparently belonging to this species, were found at Berehaven in 4 fathoms" (S. M. M.).
- C. villosa**, G. O. Sars.—Bantry, Valentia Harbour, Ballyvaughan, Aran, Westport, Lough Foyle, Strangford Lough, Youghal (A. M. N.); Donegal Bay (E. C. Davison); Newcastle and Birturbuy Bay (G. S. B.); Dublin and Clifden Bay (B. & R.); Berehaven, Antrim coast and Belfast Lough (S. M. M.).
- C. acanthoderma**, G. S. Brady.—"Porcupine," 1869, station 19, lat. 54° 53' N., long. 10° 56' W., to the west of Donegal, in 1,360 fathoms, and also at station 20, lat. 55° 11' N., long. 11° 31' W., in 1,443 fathoms (A. M. N.).

- Cythere echinata**, G. O. Sars.—“Porcupine,” 1869, with the last at station 19; also a few specimens and a single valve, station 34, lat. $49^{\circ} 51' N.$, long. $10^{\circ} 12'$, that is, due south of Bantry, in 75 fathoms (A. M. N.)
- C. dasyderma**, G. S. Brady.—“Porcupine,” stations 19 and 20, as above (A. M. N.)
- C. scabrocuneata**, G. S. Brady.—Dredged with the three preceding abyssal species at station 19, in 1,360 fathoms. All these species have a wide geographical range in very deep water in the Atlantic.
- C. quadridentata**, Baird.—Valentia, in 80 fathoms; Aran, Birturbuy, and Killary Bays (A. M. N.); Clifden Bay and Mulroy Bay (B. & R.); off Kerry coast; off Black Head, Antrim, in 15-18 fathoms, and in Belfast Lough, tidemarks to 10 fathoms (S. M. M.)
- C. emaciata**, G. S. Brady.—Bantry, Valentia, Dingle Bay, Aran, Birturbuy Bay, Clew Bay (A. M. N.); Baltimore (C. E. Davison); Clifden Bay and Mulroy Bay (G. S. B.); Galway Bay (Prof. Rowney); Berehaven, Antrim coast and Belfast Lough (S. M. M.)
- C. tuberculata** (G. O. Sars).—Bantry, Valentia, Westport (A. M. N.); Roundstone (Dr. Alcock); Baltimore (Prof. Rowney); off Great Skellig, Antrim coast, and Belfast Lough, tidemarks to 60 fathoms (S. M. M.)
- C. concllna** (T. R. Jones).—Off Valentia, Lough Foyle (A. M. N.); Roundstone (Dr. Alcock); Antrim coast, tidemarks to 18 fathoms, Rockport, Co. Down, and off Kerry coast (S. M. M.)
- C. flnmarchica** (G. O. Sars).—Roundstone, in shell-sand (Dr. Alcock); Galway Bay, in shell-sand (Prof. Rowney), off Great Skellig, Co. Kerry, Brown's Bay, Co. Antrim, tidemarks to 72 fathoms; Belfast Lough, 10 fathoms (S. M. M.)
- C. angulata** (G. O. Sars).—Dublin, Birturbuy, Clifden, and Westport Bays (B. & R.); off the Maidens Lighthouse, Antrim, in 60 fathoms; Belfast Lough, 6-8 fathoms; between tidemarks at Rockport, Donaghadee, and other places N.E. of Ireland (S. M. M.)
- C. Whitel** (Baird).—Dublin Bay (B. & S.); Island Magee, Co. Antrim, tidemarks, and off the coast of Kerry (S. M. M.)
- C. antiquata** (Baird).—Bantry, Valentia, and Aran (A. M. N.); Birturbuy and Westport Bays (B. & R.); Kerry coast; Antrim coast, 15-60 fathoms; Belfast Lough (S. M. M.)
- C. dunelmensis** Norman).—Off Valentia (A. M. N.); off Great Skellig, Co. Kerry; Rockport, Co. Down (S. M. M.)
- C. Jonesli** (Baird).—Off Valentia, to 112 fathoms; Bantry, Killary Bay, Aran (A. M. N.); Roundstone, in shell-sand (Dr. Alcock); Birturbuy Bay and Mulroy Bay (B. & R.); off Kerry coast, Antrim coast, 15-60 fathoms, Belfast Lough (S. M. M.)

Genus 3.—**Limnocythere**, G. S. Brady.

- Limnocythere inopinata** (Baird).—Lough Neagh (A. M. N.); Mullingar, canal at Dublin (B. & R.)
- L. Sancti-Patricii**, Brady and Robertson.—Lough Neagh and Rossmore, Co. Monaghan (A. M. N.); Lough Moher, which is about five miles south of Westport, Co. Mayo (B. & R.)

Genus 4.—*Cytheridea*, Bosquet.

- C. elongata**, G. S. Brady.—Bantry, Valentia, Dingle Bay, Aran, Clew Bay, Lough Foyle, Strangford Lough, Youghal (A. M. N.); Roundstone (G. S. B.); Dublin and Clifden Bay (B. & R.); Berehaven, Antrim coast, tide marks to 60 fathoms; Belfast Lough (S. M. M.).
- C. papillosa**, Bosquet.—Off Valentia in deep water, Westport (A. M. N.); Antrim coast, 15-60 fathoms; Belfast Lough, tide marks to 10 fathoms; off Great Skellig, Co. Kerry (S. M. M.).
- C. punctillata**, G. S. Brady.—Off Valentia (A. M. N.); Dublin Bay, 3-4 fathoms (B. & R.); off Great Skellig (S. M. M.).
- C. stigmosa**, Brady & Norman.—The types were dredged in deep water off Valentia in 1870 (A. M. N.). It has not as yet been found elsewhere.
- C. torosa** (T. R. Jones).—In brackish waters, Newport and Westport Bays, Co. Mayo (A. M. N.).
- C. lacustris** (G. O. Sars).—Lough Neagh (A. M. N.).
- C. subflavescens**, G. S. Brady.—Off the coast of Antrim, 15-72 fathoms; Belfast Lough, 10 fathoms; Donaghadee, tide marks (S. M. M.).
- C. sorbyana**, T. R. Jones.—In 112 fathoms, 30 miles off Valentia, in 1870 (A. M. N.); off the Great Skellig (S. M. M.).

Genus 5.—*Eucythere*, G. S. Brady.

- Eucythere declivis** (Norman).—Bantry, Valentia, Dingle Bay, Aran, Lough Foyle, Strangford Lough (A. M. N.); Galway and Roundstone (G. S. B.); Donegal Bay (E. C. Davison); Kerry coast, Antrim coast, Belfast Lough, and Donaghadee (S. M. M.).
- Var. **argus**, G. O. Sars.—In shell-sand, Galway Bay (Prof. Rowney); Dublin and Westport Bays (B. & R.).
- E. anglica**, G. S. Brady.—Westport, Co. Mayo (A. M. N.); Clifden Bay to 6 fathoms (B. & S.). This is the same form which was subsequently called by Brady and Robertson var. *prava*; they apparently having forgotten that the former had already described it under the name *E. anglica* in an appendix to his monograph (p. 475). I am disposed to regard it as a good species.

Genus 6.—*Krithe*, Brady, Crosskey, & Robertson.

- Krithe bartonensis** (T. R. Jones).—Off Valentia, Youghal (A. M. N.); Donegal (E. C. Davison); Aran, Roundstone, and Birturbuy Bays (G. S. B.); off the Great Skellig (S. M. M.).
- K. producta**, G. S. Brady.—"Porcupine," 1869, station 19, lat. 54° 53' N., long. 10° 56' W., to the west of Donegal, in 1,350 fathoms; station 20, lat. 55° 11' N., long. 11° 31' W., in 1,443 fathoms, and station 34, south of Berehaven, lat. 49° 51' N., long. 10° 12' W., in 75 fathoms. In this last locality only a single valve was found. It is a species of very wide distribution in very great depths in the ocean.

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" " 3	<i>Out of Print.</i>
" " 4	Workmen's Compensation Act, 1900.
" " 5	Separated Milk as Food for Calves.
" " 6	Charlock Spraying.
" " 7	Fluke in Sheep.
" " 8	Timothy Meadows.
" " 9	The Turnip Fly.
" " 10	Wireworms.
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" " 12	<i>Out of print.</i>
" " 13	Contagious Abortion in Cattle.
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" " 15	Fertilizers and Feeding Stuffs Act, 1893, and (Amendment) Regulations, 1904.
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" " 17	The Use and Purchase of Manures.
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" " 38	" " Potatoes.
" " 39	" " Mangolds.
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" " 50	Portable Poultry Houses.
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" " 52	Flax Experiments.
" " 53	The Construction of a Cowhouse.
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GREENLAND FALCON.
Immature Female.
Great Skellig, Co. Kerry

ICELAND FALCON.
Immature Female.
Oughterard, Co. Galway.

GREENLAND FALCON.
Adult Male.
Great Skellig, Co. Kerry.

To face page 201.]

[G. M. Roche, Photo.

ON THE OCCURRENCE OF THE
GREENLAND AND ICELAND FALCONS IN IRELAND,
DURING THE SPRING OF 1905.

BY EDWARD WILLIAMS.

[PLATE 6].

THE first intimation of the arrival of the Greenland Falcon (*Falco candicans*), certainly the handsomer of the two large arctic falcons that occasionally visit Ireland, was conveyed in two letters read by Mr. Barrington, presiding as Chairman at a meeting of the Dublin Naturalists' Field Club. One, dated 13th March, was from the light-keeper on Clare Island lighthouse, asking if there is such a bird as a white hawk, and then describing a bird the size of a sea-gull, which he watched on the 10th March eating a Curlew. The other letter, dated 14th March, was from a retired light-keeper on Owey Island, Kincaslugh, Co. Donegal, who said he was informed by the boys about a white hawk frequenting the cliffs and hills and occasionally the village, and destroying some of the domestic fowl each winter; he writes: "I got a fine opportunity of observing this bird, walking near the top of the highest hill; he flew across my path a little below me and lit on a rock. I was quite exposed, but he did not mind me for about fifteen minutes, then he flew to the cliffs. I observed him closely; he is somewhat larger than the Peregrine, lighter on the back than the Herring Gull, white neck and head, and a little rusty on the end of the wings and tail." The writer then concludes with a lament that he had not a gun to obtain the specimen. There can be very little doubt that the Clare Island bird was a Greenlander. Possibly the other bird mentioned may have been an Iclander.

During the month of March quite a number of Greenland Falcons were obtained along the west coast of Ireland. Mr. H. J. Moran of Carne, Prospect, Belmullet, says:—"Three were obtained; one, an immature male, I received, and two were forwarded to a gentleman near the city, both of which I have seen; judging from their size I should say both were

A

immature females. Three others were seen along the sand-hills, one being trapped, but afterwards making its escape. Their principal food was rabbits, barn-door fowls, and an occasional duck." The island called the Great Skellig, off the coast of Kerry, supplied three specimens, an adult male and female, and one immature female, which were shot by the light-keepers, and came into my possession. I might mention that during the previous visitation of these birds (1883-1884), several were obtained on the same island, two of which are in the Irish collection in the National Museum. One specimen is mentioned as occurring at Dunfanaghy in the current volume of the 'Irish Naturalist' (p. 119), and one was trapped on 9th April by the game-keeper on Mr. Orme's property at Crossmolina, Co. Mayo, a female in nearly adult plumage. I have also had the opportunity of examining another shot in the month of March at Mizen Head, Co. Cork, a very large immature female, with the wings and tail greatly barred.

At a meeting of the Dublin Naturalists' Field Club on March 31st, I had the pleasure of exhibiting an immature female Iceland Falcon (*Falco islandus*) which had been obtained at Oughterard, Co. Galway. The game-keeper belonging to a gentleman in the district, hearing a great commotion amongst his poultry, rushed out, and was just in time to secure the fine specimen which occupies the centre of the photograph (Plate 6), accompanying this paper. Another was seen, probably a male, but was not obtained, although seen about the district for some time afterwards. I may here remark that *Falco islandus* can always be distinguished from *F. candicans* by the dark ground with light edges to the feathers, whereas in the latter the groundwork is always white, with dark spots or longitudinal marks according to the age of the bird. It would thus appear that nine specimens of the Greenland Falcon were actually obtained to one Iceland Falcon, a strange fact that the bird resident so near our shores should be the much rarer visitant to our coast, this being the third Irish specimen in existence. According to Mr. Ussher in his invaluable work on the Birds of Ireland, the Greenland Falcon has been obtained nineteen times; if we include the nine mentioned above, it brings the total to twenty-eight

Greenland Falcons compared to three Iceland, which gives a very fair idea of the rarity of the Iceland Falcon in Ireland.

I now give weights and measurements.

Iceland Falcon (female) weight 3 lbs. 14 ozs. Spread of wings, 4 feet 3 inches. From point of beak to point of tail, 23 inches.

Greenland Falcon (female), weight 3 lbs. 11½ ozs. Extent of wings, 2 feet 10 inches. From point of beak to tail 21½ inches. In the adult Greenland Falcon the legs and cere were a very pale yellow, in the immature birds the legs and cere pale bluish grey, as were those of the Iceland Falcon. The irides in all ages a dark hazel. Four of the birds were obtained in Co. Mayo, three in Kerry, one in Donegal, and one in Cork.

For the following facts as regards the distribution of the Greenland Falcon I am indebted to Yarrell's "British Birds," Vol. 1, page 39.

The Greenland Falcon seems to be most plentiful in the inhospitable regions which enclose Baffin's Bay, and extend to the westward.

From this tract adult birds seldom wander to other lands, though the young, especially in autumn and winter, occur regularly in Iceland and not unfrequently in the Dominion of Canada from Newfoundland (where according to Mr. Reekes it is a regular visitant in the fall) westward, in the United States, the British Islands and even countries still more remote from the place of their birth. They are no doubt driven away by their parents, as is commonly the habit of birds of prey, and follow the large flocks of waterfowl which are bred in the north on their southward migration, though it would appear the Ptarmigan forms the chief sustenance of the old birds. At the same time it must not be supposed that in Greenland the white form only is found. In the southern districts of that country the Iceland Falcon is certainly more numerous, and on the other hand, there is good reason for believing that the Greenland Falcon occurs in some of the southern parts of British America, and perhaps even in the Old World.

Writing of what doubtless is this form of falcon, Sir John Richardson in the "Fauna Boreali-Americana" says, "In the middle of June, 1821, a pair of these birds attacked me as I

was climbing in the vicinity of their nest, which was built on a lofty precipice on the borders of Point Lake, 65°. They flew in circles, uttering loud and harsh screams, and alternately swooping with such velocity, that their motion through the air produced a loud rushing noise; they struck their claws within an inch or two of my head. I endeavoured by keeping the barrel of my gun close to my cheek, and suddenly elevating its muzzle when they were in the act of striking, to ascertain whether they had the power of instantaneously changing the direction of their rapid course, and found they invariably rose above the obstacle with the quickness of thought, showing equal acuteness of vision and power of motion; although their flight was much more rapid, they bore considerable resemblance to the Snowy Owl." Sir John also remarks that at the season which he saw them, the ground was still partially covered with snow, and the lakes with ice, but that this bird, like the owl just mentioned, is well adapted, "from the whiteness of its plumage, for traversing a snowy waste without alarming the birds on which it preys." And further that when the falcon pounces upon a flock of Ptarmigan, the latter endeavour to save themselves by diving instantly into the loose snow, and making their way into it a considerable distance.

The photograph (plate 6) which accompanies this paper represents the Iceland Falcon in the centre, and shows very clearly the dark ground with the pale edge-marking. The bird on the right hand is a singularly beautiful adult male Greenland Falcon, head, breast, and tail spotless white, while the back and wings are dotted over with transverse dark spots, the legs and cere a very pale yellow. The bird on the left is an immature female Greenlander, showing the dark markings of immaturity.

Dublin.

NOTES ON THE INVERTEBRATE FAUNA OF SKERRIES, CO. DUBLIN.

BY NATHANIEL COLGAN, M.R.I.A.

AMONGST the many branches of nature study which have been treated of in these pages from time to time, perhaps marine zoology has occupied least space. And yet there are few pursuits of greater interest than the dredging which furnishes to the student of sea life his indispensable raw material. Dredging, in fact, may be regarded as a species of angling, and shares with angling, properly so-called, all the fascination that comes from the uncertainties and wide possibilities of its results. The unexpected is perpetually happening, and yet not with sufficient frequency to dull the edge of appetite. Though you may draw blank after blank in your day's work, the moment when the dredge-net swims into your ken in the blue water at the stern of your boat, as the last couple of fathoms of dripping rope are hauled in, is always one of excitement even for the experienced dredger. For custom can never quite stale the infinite variety of the hidden world of the sea-floor which the dredge can but blindly grope along.

It is, however, the novice in marine zoology who enjoys the full zest of dredging. Nine-tenths of his hauls bring him up something strange, some living mollusc which he has known hitherto only from its worn shell cast up on the shore—some brilliant star-fish or urchin with its wonderfully complex organism in full activity, or some delicate form of zoophyte rooted in the battered valve of a scallop. The present notes are written by just such a novice. They give, in condensed form, the results of his first essay in sea-dredging, carried on during the course of a quiet holiday at Skerries in July last. It need hardly be said that the notes aim rather at arousing interest in what is, perhaps, a somewhat neglected branch of nature study in Ireland than at adding anything really new to our knowledge of the well explored sea-fauna of Co. Dublin. And if the intrusion of a mere beginner into the abstrusities of marine zoology calls for justification, I would only quote

the apt words of Thomas Fuller when he sat down to write an account of Wales—a country he had never seen:—"It matters not," he says, "how meanly skilled a writer is so long as he hath knowing and communicative friends." The writer of these notes, having spent some eight months in a very desultory study of his subject along the shores of Co. Dublin, can hardly claim to have so open a mind in matters of marine zoology as was Fuller's in Welsh topography; but he is quite as happily circumstanced in the matter of "knowing and communicative friends."

In naming some of the more critical species of mollusca I have received valuable assistance from Mr. A. R. Nichols, whose list of the Marine Mollusca of Ireland¹ is so indispensable to the student of distribution. I have to thank Mr. Nichols, too, for naming my small collection of Polyzoa. Miss Jane Stephens who, in her recently published list of Irish Coelenterata,² has so well summed up our present knowledge of this branch of marine zoology, has been good enough to examine some of the more puzzling zoophytes, and a few sponges and sea worms, while Professor Carpenter has kindly named the pycnogons.

The dredging trips whose results are given here were five in number. They extended no farther seaward than Rockabill, some five miles from Skerries harbour, nor did any of them carry the dredge into soundings deeper than $15\frac{1}{2}$ fathoms, low water. The boats used were the ordinary row boats of the local line and lobster fishermen—rather roomy, steady craft of broad beam, and carrying sail enough to enable us to change ground or run home rapidly on the rare occasions when the wind was favourable. Twenty-four effectual hauls were made. These were so distributed as to test all the different types of bottom known to the fishermen. Stiff mud, mixed mud and sand, gravel, and pure sand, were all sampled again and again, and one or two cautious scrapes were made over rocks. The best ground was found to lie north and east of St. Patrick's Island, or Church Island, as it is called by the Skerries folk. The deepest scrape, and perhaps the

(1) *Proc. R.I.A.*, 3rd Ser., vol. v., no. 4, 1900.

(2) *Proc. R.I.A.*, vol. xxv., Sec. B., no. 3, 1905.

most productive of all, was made in a $15\frac{1}{2}$ -fathom hole about midway between Church Island and Rockabill.

The survey of the ground thus made may be considered as fairly exhaustive, and if the knowledge gained by a few months of desultory shore collecting along the Dublin coast be enough to justify a general statement, I would say that the Skerries sea-fauna is a rather poor one for the county. Special attention was paid to the Skerries mollusca, and, adding together the results of dredging and shore collecting, the total of species secured, living or dead, was but ninety. Of this number, forty-five, or precisely one half, were found living.

In notes, such as these, written by a beginner for beginners, a few words on what may be called the technique of coast dredging may be given. The chief points to be attended to are the following:—(a) Let each cast of the dredge be preceded by a sounding, and a note of the depth found. (b) Except when working in stiff mud or pure sand, it is well to use a long line, say $2\frac{1}{2}$ times as long as the depth of your sounding. This has two advantages—the obvious one, that it ensures a good “bite” of the dredge scraper—the less apparent one, that it prevents a sudden strain on the gear should the dredge foul a rock. (c) Unless your dredge be heavily weighted, tow with the tide or current. If you tow against it with a dredge of ordinary weight, the scraper will be kept lifted off the bottom, and after your men have bent their backs to the oars for a quarter of an hour you will haul up a perfectly clean dredge. A little practice will enable you, by feeling the pulse of the tow line, to learn whether the dredge is scraping or floating. The rope thrills and throbs when the dredge is biting—it keeps a steady tautness when it lifts against a current. (d) Take with you on each cruise three or four galvanized buckets, and a half dozen wide-necked jars—ordinary peach or pine-apple jars, with a cord handle to lift by, will do admirably; for you must isolate the fruits of each haul, and preserve them living for a time in fresh sea water if you wish to determine the various species accurately, and note their range in depth. When a full dredge net comes up, and there is no suitable accommodation on board for its varied and possibly valuable contents, then the minor morals of the dredger are apt to go by the board.

You need not take out a change of clothing with you or a suit of oil-skins. If you are really in earnest with your dredging you will probably be wet through from the hips downward by the time your third haul has been dealt with, for you have already handled some 150 fathoms of dripping rope, and sat down once or twice in a puddle where the streaming dredge net rested as it came on board half filled. But it is warm summer weather, salt water is preservative, and, unless it is your first day's dredging, you will not find it necessary when you reach home to attend to the comfort of your marine spoils in the matter of fresh sea-water and roomier quarters, until after you have changed into dry clothes.

As a large proportion of the species dredged around Skerries were quite common for East Ireland, space will not be occupied here by a complete list. Only the more interesting species will be treated of in some detail, and before doing so a specimen "log" will be given showing the precise results of one of the more successful hauls. The living and dead species of Molluscs are arranged separately, a species found both living and dead being entered only in the living list, and except where otherwise stated the dead bivalve species may be taken as having occurred only in the form of single valves. Of the Zoophytes, only the more conspicuous were attended to, the microscopical species being passed over from lack of time, or of appliances for their examination in a living state. No attempt was made at preserving all the Polyzoa included in the dredgings, and little or no attention was given to the Worms or Sponges. The lists, in fact, aim at completeness only as regards the Mollusca and Echinodermata. The nomenclature adopted throughout these notes is Jeffreys' 'British Conchology' for the Mollusca, Forbes' 'History of the British Starfishes' for the Echinoderms, Bell's 'British Stalk-eyed Crustacea' for the Crabs, Hincks' 'British Hydroid Zoophytes' for the Zoophytes, and the same author's 'British Marine Polyzoa' for the Polyzoa.

Log 6.—*July 18th, 1905.*—14 fathoms; about one mile N. by E. of Church Island. Coarse gravel and sand. A haul of very varied contents, though yielding nothing of great rarity.

Total of species determined, 67, made up as follows:—
Molluscs, 41; Echinoderms, 3; Crustacea, 4; Polyzoa, 8;
Zoophytes, Sponges, &c., 10; Pycnogons, 2.

MOLLUSCA (living).

Natica catena, 1.
Velutina lævigata, 1.
Rissoa parva var. *interrupta*, 1.
Aporrhais pes-pelecani, 2.
Trophon muricatus, many.
Nassa incrassata, many.
Buccinum undatum, many.
Nucula nucleus, 4.
N. nitida, 2.
Pecten opercularis, 3.

MOLLUSCA (dead).

Trochus zizyphinus.
Natica Alderi.
Littorina littorea.
Turritella terebra
Murex erinaceus.
Defrancia gracilis.
Pleurotoma turricula.
Mytilus modiolus.
Pecten varius.
P. maximus.
P. tigrinus.
Cyprina islandica.
Axinus flexuosus.
Scrobicularia alba.
Venus exoleta.
V. lincta, 1 double.
V. fasciata.
V. gallina.
V. ovata, frequent.
Lucinopsis undata, 1 double.
Tapes virgineus, frequent.
Cardium echinatum.
C. nodosum, 1 double.
C. fasciatum, 1 double.
Psammobia ferroensis.
Mya truncata.
M. arenaria.
Corbula gibba.
Solen pellucidus.
S. ensis
Saxicava rugosa.

ECHINODERMATA.

Ophiura albida, many.
Solaster papposa, 1.
Echinus sphaera, 3.

CRUSTACEA.

Stenorynchus phalangium,
many.
Hyas araneus, many.
Portunus pusillus, many.
Pagurus Bernhardus, abundant.

PYCNOGONS,

Nymphon rubrum, 3.

POLYZOA.

Scrupocellaria scruposa.
Gemellaria loricata.
Bugula flabellata.
B. avicularis.
Cellepora avicularis.
Crisia eburnea.
Bowerbankia imbricata.
Cellaria sinuosa.

ZOOPHYTES AND SPONGES.

Campanularia verticillata.
Halecium halecinum.
Sertularia polyzonios.
Diphasia rosacea.
Sertularia cupressina.
Hydrallmania falcata.
Antennularia ramosa.
Alcyonium digitatum, many.
Sycon coronatum, 1.
Suberites donumcula, 1.

Having shown in this list the varied contents of a successful haul, it remains only to set out the more interesting results of the dredgings as a whole :—

- Chiton cinereus**.—Apparently rare; detected only in two hauls, in 12 fath., quite close to Rockabill, and in 13½ fath. E. of Church Is., 2 living specimens in each.
- Velutina laevigata**.—Only once taken, a single living specimen in 14 fath. I have never found this in shore collecting in Co. Dublin.
- Adeorbis subcarinatus**.—One dead shell in 13 fath. 2 miles E. of Shennick's Is.
- Skenea planorbis**.—Abundant on sea weeds at low water, Red Is. Distributed all along the Dublin coast, where I have gathered it, chiefly on *Laurencia pinnatifida*, at Ballybrack and at Balbriggan.
- Trophon muricatus**.—Quite a nest of this species was encountered in 14 fath. N. by E. of Church Is., 22 specimens living or dead coming up in the net.
- Defrancia gracilis**.—Twice brought up, once in 13½ fath. E. of Church Is. (a single shell), and again in 14 fath. (2 shells), all three shells large and perfect but empty. Dredged off Skerries by Walpole more than 50 years ago.
- D. linearis**.—Brought up in 4 different hauls ranging from 8 to 14 fath., 6 specimens in all, none living but the shells quite fresh.
- Pleurotoma costata**.—One specimen in shell sand, Skerries beach. Quite frequent on the Shelly Bank, Dublin Bay, August, 1905.
- P. turricula**.—A single dead specimen at 13 fath. and another at 14 fath. off Church Is. Also dredged at Skerries by Walpole upwards of 50 years ago. Not infrequent on the North Bull and Shelly Bank, Dublin Bay, where I gathered it in June and August last. One of the North Bull specimens measured fully ¾ in. in length.
- Utriculus obtusus**, } —Both brought up dead in the same haul from 8
U. truncatulus, } fath. off Colt Is., only two examples of each.
 The first species I found rather frequent in shell sand at North Bull in June last.
- Philine aperta**.—In great profusion, living, in stiff mud near the mouth of Skerries Harbour at a depth of from 3 to 4 fath., some hauls here bringing up fully 50 specimens of all sizes from ¼ in. to 1½ in. A single shell brought up from 13 fath. between Church Is. and Rockabill. Though a common species, I have not so far found either the animal or the shell cast up on the Dublin coast.
- Dentallium entalis**.—Living in three distinct hauls from 8, 13, and 15½ fath., but not abundant, the largest number in any one haul being 3.
- Nucula nitida**.—Living in several hauls from 3 to 13 fath. Most frequent at depths from 3 to 4 fath. in mixed sand and mud, fully a dozen specimens coming up in one haul. *N. nucleus*, though found living here at 13 and 14 fath., was much rarer.
- Modiolaria marmorata**.—A single living specimen from 12 fath. quite close to Rockabill,

Pecten maximus.—Three well grown living specimens from 15½ fath., between Rockabill and Church Is., along with numerous living examples of *P. opercularis*.

P. tigrinus.—A single valve from 8 fath. and another from 14 fath.

Axinus flexuosus.—One, living, from 13 fath.; single valves from 8, 13, and 14 fath. Rather frequent in shell sand at North Bull in June last, and at the Shelly Bank in August last.

Tellina donacina.—A single valve from 8 fath.

Scrobicularia prismatica.—A single valve from 13 fath.

Cardium exiguum.—A single valve from 3 fath.

C. fasciatum.—One living from 8 fath.: valves from 13 and 14 fath.

C. nodosum.—Seven living examples from 8 fath.: numerous valves from 13 and 14 fath.

Solen pellucidus.—Two double valves from 13 fath.: many single valves from 5 distinct hauls ranging from 4 to 13 fath.

Thracia distorta.—A single valve from 13 fath. north of Church Is.

Of the few Polyzoa collected, the most frequent was *Bowerbankia imbricata*. This was brought up at almost every haul from 8 to 15½ fath., and in some cases was very luxuriant, exceeding 4 inches in height. To the Zoophytes already listed as included in the 14 fath. haul, the other hauls added but 3 species, *Eudendrium ramosum*, *Antennularia antennina*, and *Plumalaria Catharina*; all of these occurred but once. Of all the Zoophytes noted, the commonest was *Campanularia verticillata*, which appeared in every haul from 8 fathoms downward. Next in frequency came *Antennularia ramosa*, *Hydrallmania falcata*, and *Halecium halecinum*, the first of these often a very beautiful object, as its bright orange branchings came to the surface. One example from a depth of 13 fathoms E. of Church Is. measured fully 10 inches in height and in spread of branches. This even extorted the admiration of the boatmen, who, speaking of the contents of the dredge-bag in general, had been careful to let me know that they “put no pass on them things,” to “put pass on” being the Skerries idiom equivalent to “set value on.”

The Echinoderms collected, being but few, may be set out here in full:—

Comatula rosacea.—Quite rare. One perfect example from 13½ fath., and several broken arms from 13 fath. When placed in spirit the single specimen captured exuded its exquisite carmine dye, which in a few seconds tinged the whole contents of the phial.

- Ophiura texturata.**—Common in all the deeper hauls. In one from 13 fath. the dredge appeared to have passed over a battle ground of this species, most of the larger specimens brought up (some with a disk $\frac{7}{8}$ in. diameter, and with $5\frac{1}{2}$ in. spread of arms), having one or more of the arms repaired by a fresh growth, slender young arms growing out from thick stumps fully twice their diameter.
- O. albidula.**—Very common in the hauls from shallower water.
- Ophiocoma rosula.**—Frequent from 12 to 15 fathoms, and extremely variable in colour.
- Uraster rubens.**—Rather rare. One 8 inch in diameter from 13 fath., two from 12 fath., and two from $15\frac{1}{2}$ fath.
- Solaster papposa.**—Rare. One specimen from 13 and another from 14 fath.
- Asterias aurantiaca.**—Very rare. Only one specimen, a full grown one, from a depth of $13\frac{1}{2}$ fath., was brought up in the whole series of 24 hauls.
- Echinus sphaera.**—Not infrequent from 4 to $15\frac{1}{2}$ fath. One fine example measuring $12\frac{1}{2}$ inches in circumference, without the spines, was dredged living in 12 fath. N. E. of Church Is.
- Amphidotus cordatus.**—Very common, cast up on the sandy shores at low water, but not once captured in the dredge, although the characteristic spoon-shaped oral spines were detected in many of the hauls from deep water.

No special attention was paid to the Crustaceans, but the following species of crabs were observed either in the dredgings or by the shore:—two Spider Crabs, *Stenorynchus phalangium* and *Hyas araneus*, and one Hermit Crab, *Pagurus Bernhardus*, were common, appearing in almost every haul, and sometimes in abundance, from 5 to $15\frac{1}{2}$ fathoms; the Porcelain Crab, *Porcellana longicornis*, and two Swimming Crabs, *Portunus depurator* and *P. pusillus*, were all three dredged in $15\frac{1}{2}$ fathoms, and the third again in 14 fathoms, but none of these appeared to be common, and of the second only one specimen was captured. Adding to these the ubiquitous Red Crab, *Cancer pagurus*, and Shore Crab, *Carcinus maenas*, the total of crabs observed was but eight. Only two species of Pycnogons were dredged, *Nymphon rubrum*, already mentioned, and *Pycnogonum littorale*. The first was brought up twice, three specimens in one haul and two in another; of the second species, only a single specimen was captured, in 13 fathoms.

In conclusion, a few of the Skerries local names for sea animals may be given. These were all found current amongst the Skerries fishermen in July last. The Limpet (*Patella vulgata*) is called Barnacle, and the Whelk (*Buccinum undatum*)

Walk. The Common Mussel is known as Muskel, *Trochus umbilicatus* as Bachelor's Button, and the Large Scallop (*Pecten maximus*) as Lamp Shell. Two of the older fishermen told me they recollected having seen the scallop shells filled with fish oil and used as lamps in Skerries cabins many years ago. The popular Skerries names for the crabs and star-fishes yielded three evident survivals from the Gaelic—Parthawn for the Long-legged Spider Crab (*Stenorynchus phalangium*), Crossāne for the Common Starfish (*Uraster rubens*), and Morane for the Lesser Sand-star (*Ophiura albida*). The restriction of the Gaelic "Parthawn," the original of the Lowland Scotch Partan, to the economically worthless Spider Crab is interesting. Originally the Gaelic word was probably used at Skerries, and throughout the Fingal district of Co. Dublin, generically for all the crabs, including the edible species, *Cancer Pagurus*, the Great or Red Crab. But this edible crab, being an article of trade between the Fingal fishermen and English-speaking dealers and consumers, has had gradually imposed upon it the English name Red Crab, by which it is now known at Skerries, while its despised long-legged relative, being never mentioned in such trading intercourse, retained the old Gaelic name.

Sandycove, Co. Dublin.

NOTES ON THE MOLLUSCA OF COUNTY LOUTH.

BY P. H. GRIERSON.

THE following are notes taken on the Mollusca of County Louth during the years 1904—1905. Though it is the smallest county in Ireland, without any very large lakes, yet it has proved to be one of the richest in Mollusca, having yielded 88 species.

The county comprises portions of the following sheets of the one-inch Ordnance Map—60, 70, 71, 81, 82, 91, 92. My endeavour has been to procure specimens of each species from one or more localities in each sheet, and in my list I give the number of the sheet where found, together with the name of the nearest town or well known demesne.

I have, as usual, followed Dr. Scharff's nomenclature as given in *Irish Naturalist*, 1892. I am much indebted to Mr. Chas. Oldham for help given in determining the various species and varieties.

Vitrina pellucida, Müll.—Dundalk; Flurry Bridge (70). Ballymascanlon; Omeath; Ravensdale (71). Darver; Collon (var. *depressiuscula*) (81). Annagassan; Barmeath; Clogher (82). Townley Hall (91). Beaulieu (92). Common nearly everywhere, except the var. *depressiuscula*, which, though plentiful at Collon, I did not find elsewhere.

Hyalinia cellaria, Müll.—Dundalk; Flurry Bridge (70). Omeath (var. *albina*); Carlingford; Grange (71). Ardee; Collon (81). Dunany; Barmeath; Blackhall (82). Mellifont Abbey; Townley Hall; near Drogheda (91). Beaulieu and Baltray (92). Common; the variety found at Omeath is a very delicate pretty shell.

H. alliarla, Müll.—Near Narrow Water (60). Ravensdale; Omeath; Carlingford (71). Collon (81). Townley Hall (91). Beaulieu (92). Fairly common; the variety *viridula* was taken at Narrow Water, Townley Hall, and Beaulieu.

H. nitidula, Drap.—Narrow Water (60). Dundalk; Flurry Bridge (70). Omeath; Ravensdale (71). Ardee; Collon (81). Townley Hall (91). Beaulieu (92). Not common.

H. pura, Alder.—Dundalk; Flurry Bridge (var. *nitidosa*) (70). Ballymascanlon; Omeath (71). Collon (81). Barmeath (82). Townley Hall (var. *nitidosa*) (91). Beaulieu (92).

H. radiatula, Alder.—Dundalk; Blackrock (70). Ravensdale (var. *viridescens-alba*); Carlingford (71). Ardee; Darver (81). Townley Hall (91). Rather scarce. I did not take these shells in sheets 82. 92.

H. crystallina, Müll.—Dundalk; east of Inniskeen; Flurry Bridge (70). Ballymascanlon; Ravensdale; Omeath; Bush Station (71). Collon (81). Salterstown; Barmeath; Lough Drumshallon (82). Townley Hall (91). Beaulieu (92).

H. fulva, Müll.—East of Inniskeen; Blackrock; Flurry Bridge (70). Ballymascanlon; Ravensdale; Carlingford; Bush Station (71). Ardee (81). Barmeath; Blackhall (82). Townley Hall, and near Drogheda (91). Beaulieu (92). Common in moist situations.

H. nitida, Müll.—Kilcurry (70). Near Bush Station (71). Ardee (81). Near Blackhall; Lough Drumshallon (82). Beaulieu (92). Scarce.

Arlon ater, L.—Narrow Water (var. *brunnea*) (60). Dundalk (70). Carlingford (vars. *aterrima*, *reticulata*, *oculata*, *brunnea*); Omeath (71). Ardee; Darver; Dromiskin (81). Barmeath; near Blackhall demesne (var. *brunnea*) (82). Mellifont Abbey (91). Beaulieu (92). Common.

A. subfuscus, Drap.—Narrow Water (60). Dundalk (70). Omeath (71). Dromiskin; Ardee (81). Togher; Blackhall Demesne (var. *brunnea*) (82). Mellifont Abbey (91). Beaulieu (92). Fairly common

- A. hortensis**, Fér.—Narrow Water (60). Dundalk; Louth (70). Omeath; Carlingford (71). Ardee; Drumcar (81). Barmeath; Blackhall demesne (82). Mellifont Abbey (91). Beaulieu (92). Not uncommon.
- A. circumscriptus**, Johnst.—Louth (70). Omeath (71). Drumcar; Ardee (81). Annagassan; Barmeath; Blackhall (82). Mellifont Abbey (91). Beaulieu (92). Common.
- A. intermedius**, Normond.—Ardee; Drumcar; Collon (81). Annagassan; Blackhall (82). Townley Hall (91). Beaulieu (92). Fairly common.
- Testacella scutulum**, Sow.—Miss Sidney Smith sent me a dozen specimens from Piperstown garden (82), where they are very plentiful, and mentioned that she had taken them in her garden at Greenhills, near Drogheda (92). I made many enquiries among farmers in the district, but was unable to obtain specimens from the open fields, though several people said they often saw them when ploughing in the springtime.
- Limax maximus**, L.—Narrow Water (var. *sylvatica*) (60). Dundalk (70); Ardee (81). Blackhall (var. *Ferussaci*) (82). Mellifont Abbey (91). Beaulieu (92). Fairly well distributed.
- L. flavus**, L.—Louth (70). Carlingford (71). Ardee (81). Togher (82). Near Drogheda (92). Not common. I have only found it near houses.
- L. marginatus**, Müll.—Narrow Water (60). Dundalk (70). Omeath; Carlingford (71). Collon; Dromiskin (var. *bettonii*) (81). Blackhall (82). Mellifont Abbey (91). Beaulieu (92). Common in woods.
- Agriolimax agrestis**, L.—Dundalk (var. *sylvatica*) (70). Omeath; Carlingford (71). Dromiskin; Ardee (81). Annagassan; Barmeath (82). Mellifont Abbey (91). The commonest of all the slugs; said to do much injury to crops in spring.
- A. lævis**, Müll.—Castlerock (70). Carlingford (71). Ardee and near Castlebellingham (81). Blackhall (82). Beaulieu (92). Fairly common in marshy ground, but easily overlooked.
- Amalia Sowerbyi**, Fér.—Carlingford (71). Drumcar; Ardee (81). Barmeath; Blackhall (82). Mellifont Abbey (91). Baltray (92). Not very common.
- A. gagates**, Drap.—Dundalk (var. *rava*) (70). South of Carlingford (var. *plumbea*) (71). Dromiskin; Drumcar (81). Annagassan (82). Baltray (92). Not common.
- Helix pygmæa**, Drap.—Narrow Water (60). Flurry Bridge; east of Inniskeen; Dundalk (70). Ballymascanlon; Ravensdale; Omeath (71). Darver; Collon (81). Barmeath; Lough Drumshallon (82). Townley Hall (91). Beaulieu (92). Well distributed.
- H. rotundata**, Müll.—Narrow Water (60). Dundalk; Flurry Bridge (70). Ballymascanlon; Omeath (71). Drumcar; Darver (81). Dunany; Barmeath (82). Mellifont Abbey; Townley Hall (91). Beaulieu; Baltray; (92). To be found nearly everywhere.

Helix rupestris, Drap.—Castlerocke; near Dundalk (70). Drogheda (91). Very uncommon.

H. pulchella, Müll.—Dundalk (70). Ballymascanlon (var. *excentrica*); Grange; Bellurgan (var. *excentrica*); Carlingford (vars. *costata* and *excentrica*) (71). Ardee; Collon; Dromiskin (81). Dunany; Clogher; Barmeath (var. *costata*); Salterstown (vars. *costata* and *excentrica*) (82). Townley Hall (var. *costata*) (91). Baltray (92).

This newly discovered variety, or as it is now called, *Helix* (*Vallonia*) *excentrica*, appears to be rather common in the counties of Meath and Louth.

H. aculeata, Müll.—North of Dundalk; Flurry Bridge (70). Ballymascanlon (71). Collon (81). Townley Hall (91). Beaulieu (92). Not common except in a district over 2 miles north of Dundalk.

H. lamellata, Jeffr.—Flurry Bridge (70). Ravensdale demesne (71). I could not get it in any other district in Co. Louth.

H. hispida, L.—Dundalk; Flurry Bridge; Lough Cortail (70). Ballymascanlon; Omeath; Bush station (71). Ardee; Collon (81). Dunany; Barmeath (82). Mellifont Abbey; Townley Hall (var. *albo-cincta*) (91). Beaulieu (92). Very common.

H. rufescens, Penn.—Dundalk (70). Omeath; Carlingford (71). Ardee (81). Dunany; Blackhall (82). Townley Hall (var. *albo-cincta*); near Drogheda (var. *alba*) (91). Beaulieu (92). Fairly common.

[**H. fusca**, Mont.—I have not been able to find this shell in the county, but I believe it should be taken in the glen south of Ravensdale House, or possibly in Townley Hall demesne. I took it in counties Armagh and Down, adjacent to Co. Louth.]

H. pisana, Müll.—Termonfeckin; Clogher (var. *alba*) (82). Baltray (92). Miss Sydney Smith mentioned that she took this snail close to Drogheda. It is distributed along the coast from the mouth of the Boyne to just south of Clogher Head. I could not find it at any more northerly station.

H. virgata, Da Costa.—Dundalk (70-71). Ballymascanlon (71). Ardee; Dromiskin (81). Termonfeckin (type and var. *lutescens*); near Blackhall; Barmeath (82). Townley Hall (var. *lutescens*), and close to Drogheda (91). Baltray (92). Common locally.

H. intersepta, Poir.—Dundalk (70). Ballymascanlon (71). Dunany; Barmeath (82). Townley Hall and near Drogheda (91). Not common.

H. ericetorum, Müll.—This species is very rare in the county. I only took a few living specimens at Dromin railway station, where they may possibly have been imported with gravel.

H. acuta, Müll.—Ballagan (71). Dromiskin (81). Annagassan; Clogher (varieties *flammulata*, *articulata*); Salterstown (var. *strigata*); Termonfeckin (82). One mile north of Drogheda (91). Baltray (92). Common along the coast south of Dromiskin; not common on the more northern coasts. Very scarce inland.

H. nemoralis, Müll.—Dundalk (70). Ballymascanlon; Bush station (71). Dromiskin; Ardee (81). Barmeath (82). Mellifont Abbey (91). Beaulieu; Baltray (92). Common in most localities.

- Helix hortensis**, Müll.—Ardee, and 5 miles north on old Carrickmacross road (81) were the only localities in which I took it, and the shell was not plentiful. Miss Sydney Smith showed me some *H. nemoralis* taken near Termonfeckin; there was one *H. hortensis* among them (92).
- H. aspersa**, Müll.—Dundalk (70-71). Ballymascanlon; Omeath; Grange (var. *undulata*) (71). Ardee; Dromiskin (81). Annagassan (82). Mellifont Abbey (91). Beaulieu; Baltray (92). Fairly common in most places.
- Bullimus obscurus**, Müll.—Ardee (type and var. *albina*) (81). Townley Hall (91). Rare; taken in both places on or close to limestone.
- Cochlicopa lubrica**, Müll.—Dundalk; Blackrock; Cortail (70). Ravensdale; Omeath; Carlingford (71). Ardee (type and var. *hyalina*); Darver; Collon (81); Dunany; Barmeath (82). Townley Hall (type and var. *hyalina*) (91). Beaulieu; Baltray (92). Common everywhere.
- Cœclianella acicula**, Müll.—Three miles north of Dundalk (70). Carlingford (71). Ardee (81). E. and W. of Drogheda (91-92). Fairly common in the south of the county in the limestone district; rare, except in one quarry hole at Ardee, and very rare north of Dundalk.
- Pupa anglica**, Fér.—East of Inniskeen (70). Ballymascanlon (71). Collon (81). Townley Hall (type and var. *pallida*) (91). Rare; found very locally.
- Pupa cylindracea**, Da Costa.—Dundalk (70). Ballymascanlon; Omeath; Carlingford (type and var. *curta*) (71). Annagassan; Ardee; Darver (81). Dunany (82). Mellifont Abbey; Townley Hall (91). Beaulieu; Baltray (92). Common everywhere.
- P. muscorum**, Müll.—Dundalk (70). Ballymascanlon; Omeath (71). Dromiskin; Ardee (81). Barmeath; Dunany (82). Townley Hall (var. *brevis*) (91). Drogheda (92). Fairly common along the coast, rare inland.
- Vertigo edentula**, Drap.—East of Inniskeen (70). Ballymascanlon; Omeath; Carlingford (71). Collon (81). Barmeath (82). Townley Hall (91). Rather common in old plantations.
- V. pygmæa**, Drap.—Dundalk; Blackrock (70). Ravensdale; Omeath; Carlingford; Bellurgan (71). Salterstown (82). Baltray (92). Rare, except near the sea coast.
- V. substriata**, Jeffr.—Ravensdale; near Bush station (71). Ardee; Collon (81). Lough Drumshallon (82). Townley Hall (91). By no means common.
- V. antivertigo**, Drap.—East of Inniskeen; Blackrock (70). Carlingford and south of Bush station (71). Ardee; Collon (81). Barmeath (82). N. of Townley Hall and near Drogheda (91). Common in marshy places.
- Balea perversa**, L.—Louth (70). Carlingford (71). Ardee; Collon (81). Blackhall (82). Townley Hall (91). Baltray (92). Very local.
- Clausilia bidentata**, Ström.—Dundalk (70). Ballymascanlon; Omeath; Carlingford (71). Collon (81). Annagassan; Barmeath (82). Townley Hall (91). Beaulieu; Baltray (92). Fairly common.

- Succinea putris**, L.—Blackrock (70). Grange (71). Ardee (81). Lough Drumshallon (82). Townley Hall (91). Beaulieu (92). Not very common.
- S. elegans**, Risso.—Dundalk (70). Ballagan (71). Ardee (81). Blackhall (82). Beaulieu (92). Not common.
- Carychium minimum**, Müll.—Dundalk (70). Ballymascanlon; Omeath; Carlingford (71). Ardee; Collon (81). Barmeath; Lough Drumshallon (82). Townley Hall (91). Beaulieu (92). Common in most damp situations among leaves and moss, &c.
- Alexia denticulata**, Mont.—Dundalk (70-71).
- Limnæa stagnalis**, L.—Killany (70). Grange (71). Ardee (81). Beaulieu (92). Not common.
- L. auricularia**, L.—Near Blackhall (82). Beaulieu (92). Rare.
- L. peregra**, Müll.—Killany; Dundalk (70). Lough Aumore; Omeath; Grange (71). Ardee (81). Annagassan; Barmeath; Blackhall (82). Townley Hall (91). Beaulieu (92). Common everywhere.
- L. palustris**, Müll.—East of Inniskeen; Dundalk (70). Carlingford (71). Ardee; Collon (81). Annagassan; Barmeath; Lough Drumshallon (82). Townley Hall (91). Drogheda (92). Rather common.
- L. truncatula**, Müll.—Dundalk; Blackrock (70). Carlingford (71). Ardee; Collon (81). Annagassan; Clogher; Lough Drumshallon (82). Townley Hall (91). Beaulieu (92). Common.
- Physa fontinalis**, L.—Killany (70). Dundalk (70-71). Darver; Ardee (81). Annagassan (82). Beaulieu (92). Common.
- Aplexa hypnorum**, L.—Dundalk (70-71). Carlingford (71). Ardee (81). Near Blackhall (82). Not common.
- Pianorbis marginatus**, Drap.—Killany; Dundalk (70). Lough Aumore (71). Ardee (81). Blackhall (82). Near Drogheda (91). Beaulieu (92). Fairly common.
- P. carinatus**, Müll.—Rathescar (81). Annagassan (82). Near Townley Hall (91). Rather rare.
- P. vortex**, L.—Killany (70). Very rare.
- P. spirorbis**, L.—Killany; Dundalk; Blackrock (70). Lough Aumore; Carlingford (70). Ardee (81). Blackhall (82). North of Townley Hall (91). Fairly common.
- P. contortus**, L.—Killany; Dundalk (70). Near Bush station (71). Darver; Collon (81). Salterstown; Blackhall (82). Beaulieu (92). Common.
- P. albus**, Müll.—Lough Ballybony; Ardee; Collon (81). Not common.
- P. glaber**, Jeffr.—Ballymascanlon (71). Quarry-hole near Townley Hall (91). Beaulieu (92). Very local, but plentiful where found.
- P. crista**, L.—East of Inniskeen; Lough Cortail; Dundalk (70). Lough Armore; Omeath (71). North of Ardee; Collon (81). Salterstown; Barmeath; Dunleer (82). Beaulieu (92). Frequent.
- P. fontanus**, Lightf.—Near Blackrock (70). Lough Aumore (71). Collon; Rathescar (81). Beaulieu (92). Fairly common.
- Ancylus fluviatilis**, Müll.—Dundalk (70). Carlingford (71). Ardee (81). Townley Hall (91). Not uncommon.

- Ancylus lacustris**, L.—Lough Ballybony (81). Barmeath; Lough Drumshallon (82). Beaulieu (92). Not common.
- Acme lineata**, Drap.—East of Inniskeen; Flurry Bridge (70). Omeath (71). Collon (81). Barmeath (type and var. *alba*) (82). Townley Hall (91). Beaulieu (92). Very plentiful at Townley Hall. Fairly numerous near Omeath, taken in moss on the north side of Ballyoonan mountain, where it was quite exposed; no trees or shelter of any kind growing.
- Bythinia tentaculata**, L.—Killany; Dundalk (70). Ballymascanlon (71). Ardee; Darver (81). Annagassan; Blackhall (82); Drogheda (91). Beaulieu (92). Very common.
- Hydrobia ulvæ**, Penn.—Dundalk (70-71). Carlingford (71).
- H. Jenkinsi**, Smith.—Dundalk (70). Carlingford (71). Drogheda (91). Baltray (92). Very plentiful in suitable situations.
- Valvata piscinalis**, Müll.—Killany; Dundalk (70); Darver; Collon; Rathescar (81). Annagassan (82). Beaulieu (92). Common.
- V. cristata**, Müll.—Dundalk (70). Ballymascanlon (71). Darver; Ardee; Collon (81). Barmeath; Blackhall (82). Drogheda (91). Beaulieu (92). Fairly common.
- Sphærium corneum**, L.—Dundalk (70). Grange (71). Darver; Ardee; Collon (81). Annagassan; Blackhall (82). Beaulieu (92). Common.
- S. lacustre**, Müll.—Killany; Dundalk (70). Grange (71). Ardee (81). Togher; Blackhall (82). Beaulieu (92). Fairly common.
- Pisidium amnicum**, Müll.—Fane Valley (70). Ardee (81). Common in some rivers.
- P. nitidum**, Jenyns.—Omeath; Carlingford (71). Ardee (81). Salterstown (82). Not common.
- P. fontinale**, C. Pfr.—Dundalk; Lough Cortail (70). Carlingford; Grange (71). Ardee; Collon; Rathescar (81). Salterstown; Barmeath; Blackhall (82). Drogheda (91). Beaulieu (92). Common.
- P. milium**, Held.—East of Inniskeen; Lough Cortail; Dundalk (70). Carlingford; Grange (71). Ardee (81). Salterstown; Lough Drumshallon (82). Drogheda (91). Beaulieu (92). Common.
- P. obtusale**, C. Pfr.—Dundalk (70). Ardee (81). Blackhall (82). Not common.
- P. pusillum**, Gmel.—Dundalk (70). Carlingford (71). Ardee (81). Lough Drumshallon (82). N. of Townley Hall (91). Beaulieu (92). Fairly common.
- Unio margaritifer**, L.—Kilcurry River (70). Very plentiful in this river, and is also to be found in the Falmore river.
- Anodonta cygnea**, L.—Lough Corradoran (70). This shell is difficult to get; there are few natural lakes near the limestone area of Co. Louth, and the margins are too boggy to reach the edges. They are reputed to be in Lough Ballybony (81), but I could not get near the lake or obtain a specimen from it.

Clondalkin.

NOTES.

BOTANY.

The numbering of the Botanical County-Divisions of Ireland.

I need hardly say that the difficulty to which Mr. Waddell refers (*supra*, p. 197) was fully before me during the years in which I worked at the question of the botanical subdivision of Ireland. The more I studied the question, the more my mind recoiled from that totally unscientific and misleading numeration which, beginning in Cornwall and proceeding to Shetland, would pass thence without a break to South Kerry. The solution of the difficulty which occurred to me at the time, and which I would now suggest, is a very simple one; namely, to use a prefix (I) to the Irish numbers, which would distinguish them from corresponding English ones. The Britannic series would then run 1, 2, 3, . . . 112, I1, I2, I3 . . . I40. The series I1, I2, I3, . . . I40 is as easy and as short to write, print, or say as 113, 114, 115, . . . 152, so there exists no practical difficulty against its adoption; and I submit that scientifically it is infinitely preferable. Another point worthy of mention is this: that the numeration 1 . . . 40 for the Irish divisions having been adopted in a book that may fairly be called a standard work, the advantages of following the same system, unless it be so bad as to be untenable, are sufficiently obvious. I do not claim that the numeration which I adopted is perfect, but the absurdity of using one scheme for the Flowering Plants and Vascular Cryptogams, and a different one for those plants which follow next, would undoubtedly strike a bystander. Whatever plan Mr. Waddell adopts, I cannot think that his suggestion of accepting the forty divisions of "Irish Topographical Botany," and numbering them 113 to 152, will meet with approval. This would be hopelessly confused with Babington's scheme, in which a different set of divisions is numbered 113 to 149, and with that adopted by English conchologists, in which a still different series is numbered 113 to 148. Both of the latter schemes have been recently used in important books or papers, and must be regarded as *in esse*.

The whole question of a satisfactory scheme is hedged round with difficulty, but it seems to me that the latest suggested improvement will only make confusion worse confounded. I also, like Mr. Waddell, would ask the opinions of others.

R. LLOYD PRAEGER.

Dublin.

Achill Island Plants.

Three days spent in Achill last July, though not specially devoted to botany, were productive of a few additions to the flora of the island, as listed by me last year (*Irish Nat.*, xiii., 278), and of new stations for some rarer plants. One of the additions is a really rare plant, namely,

Lycopodium inundatum, the previously known range of which in Ireland consisted of a few stations in West Cork, one in North Kerry, and two in West Galway. The species new to Achill are marked with an asterisk.

Cochlearia danica.—At the signal tower.

Hieracium anglicum.—On an inaccessible ledge on the Slieve More scarp, at about 1,500 feet. No doubt the plant noted by H. C. Hart under this name, and one of the four plants recorded from Achill which I did not find previously.

Arctostaphylos Uva-ursi.—Plentiful on the signal tower hill.

Salix herbacea.—Rocks at west end of Slieve More, about 1,500–1,700 feet.

* *Ceterach officinarum*.—Plentiful on the wall surrounding the signal tower, elevation about 800 feet. A strangely isolated and exposed station for this fern. It was accompanied by *A. Adiantum-nigrum* and *A. Trichomanes*.

* *Lastrea Oreopteris*.—One good clump in a ditch S.W. of Dugort. A very rare plant in West Mayo.

Isoetes lacustris.—Abundant in Bunnafreva Lough East, with a vast quantity of *Lobelia Dortmanna*.

* *Lycopodium inundatum*.—This, one of the rarest plants which Achill yields, was found at the place which of all others on the island has been most frequently visited by botanists, namely, Sraheens Lough, on the west shore of the lake.

R. LLOYD PRAEGER.

Plants of the Ben Bulbin District.

Epilobium angustifolium.—On Glenade cliffs the ordinary deep rose form is accompanied by a plant with red sepals and delicate pink petals, forming a really beautiful sight.

Euphrasia Salisburgensis.—This is abundant on both sides of Glenade, among the alpine plants. Here on the cliffs it grows more lax and less branched, with larger greener leaves, than the little bushy brown form of the limestone pavements. I have it also from Glencar and Annacoona, in Sligo, from which county it is hitherto unrecorded.

Ulmus montana.—Clearly native on limestone cliffs among *Taxus*, *Pyrus Aria*, &c., far from planted trees or woods, on the north side of Glenade. New to the Ben Bulbin district.

Agropyron caninum.—Also an addition to the Ben Bulbin flora; growing with the last. This grass seems particularly partial to dry limestone cliffs.

Equisetum hyemale.—By the Bonet River, near Lurganboy. This station helps to fill a large gap in its distribution, its only recorded Connaught stations being far south—in Clare and S.E. Galway.

A number of other plants, additions to the flora of Sligo or Leitrim, in themselves not rare species, will be duly mentioned in my next annual summary. The above were collected in August last.

R. LLOYD PRAEGER.

Dublin.

Dicranodontium longirostra at Holywood.

About a couple of years ago I found on the rotten stump of a tree on the hill above Holywood, Co. Down, a moss which I made out to be *Dicranodontium longirostra*, B. & S.; this naming has been confirmed by Mr. J. E. Bagnall, of Birmingham. I am not aware of the typical plant having been previously recorded for Ulster, but var. *alpinus* was found by Dr. Moore "on moist rocks at Cushendall" (*Proc. R. I. A.*, 1872). It is not at all a common moss, and its occurrence in Ulster is worthy of record.

J. HUNTER.

Edinburgh.

The Parsley Fern in Co. Wicklow.

Last autumn Mr. R. V. Dixon brought me some small fresh fronds of *Allosorus crispus*, which he and his son had found growing in a crevice in a boulder beside the stream that drains Lough Nahanagan. In view of the fact that this fern has not hitherto been recorded from any station outside the North of Ireland, I delayed publication of Mr. Dixon's interesting discovery until I had examined the locality. This was done on June 18. The fern was not refound, but my examination convinced me that no doubt can be entertained as to the plant being indigenous in this station. The habitat is a wild moor, 1,100-1,300 feet, far from any house or former reclamation. Along the stream *Polypodium Fhegopteris* and *Saxifraga stellaris*, both of which I found in abundance on the cliffs overhanging Lough Nahanagan (1,400-1,700 feet), descend from their alpine habitat to mingle with the riverside vegetation, between the deserted mines and the lake. I have little doubt but that the Parsley Fern likewise has come down stream from some station higher up, more in keeping with the alpine proclivities which it usually displays in Ireland (though in Co. Antrim it descends to 300 feet). I searched portion of the cliffs over Lough Nahanagan with some care with this thought in mind, but *P. Fhegopteris*, as stated above, and *Cystopteris fragilis*, were the only uncommon ferns seen. With them was *Rubus saxatilis*, of which the only Wicklow records appear to be those in "The Irish Flora," 1833. Unfortunately, unaware of its rarity, the discoverers of the Parsley Fern in Wicklow brought away with them the only plant they found.

R. LLOYD PRAEGER.

Dublin.

Orobanche rubra in Sligo.

At the end of June Mrs. Johnson found a specimen of *Orobanche rubra*, Smith, in the sandhills at Rosses Point. It was growing among the Bent at the end of the sandhills nearest to the golf links. As it was almost our last day we had not an opportunity of looking for more specimens. The Rev. Canon Lett kindly determined the plant for me.

W. F. JOHNSON.

Poyntzpass.

Epilobium alsinefolium in Co. Leitrim.

Since there is apparently no note of this plant's having been gathered in its only Irish station since its discovery by Messrs. Barrington and Vowell twenty-one years ago, a note of its distribution as seen last August may be of interest; especially since its quantity as now observed is considerably greater than the note of the finders (*Proc. R.I.A.* (2), iv. (Science), p. 505). would indicate—on which account I need not hesitate to specify the locality where it grows. The Report on the Flora of Ben Bulbin, &c., states "1,000 feet. Seen only in two places on the Glenade cliffs, both close to each other. In one locality there is a large bed of it, and it is scattered in patches along a small stream." I found it extending for half a mile along the low cliffs in the townlands of Crum-paun, Moneengaugagh, and Carrowduff. It may extend further eastward and westward, as my exploration of this part of the Glenade cliffs did not reach beyond these townlands. It occurs at frequent intervals along this scarp. At the eastern end it ascends a small stream (as described above), attaining an elevation of about 1,200 feet. Elsewhere it occurs in large colonies in dripping rocks, growing among the *Cochlearia alpina* and *Chrysosplenium oppositifolium* with which they are hung. It also follows the rills down their course over the talus, below the cliffs, and I found the plant browsed by cattle as low down as 700 feet. The Irish plant is a desideratum in most herbaria, and I shall be happy to send a specimen to any botanist who needs it for his collection.

R. LLOYD PRAEGER.

Dublin.

Matricaria discoidea in Co. Cork.

Early in August last I found this colonist, as we may now call it, by the roadside between Carrigrohane and Ballincollig; since then I have noticed it growing abundantly in a market field at Midleton, and freely on waste ground and roadsides at Little Island. Judging by the freedom with which it grows in these widely separated localities I have no doubt that it will be found in similar situations, if looked for, in other parts of the county.

This plant, though first noticed in Ireland as recently as 1894, is now known to be abundant in many parts of the country from north to south, but it can hardly have spread to all localities from one centre and it would be of much interest to trace its origin or manner of introduction in different districts.

In most of the places in which I have seen it I think it is probably a product of the miscellaneous collections of seeds and waste corn sold everywhere in recent years as poultry food; though at Limerick, where it seems at present confined, with many other aliens, to a disused quarry, it has most likely sprung from the sweepings of flour mills which are sometimes deposited there.

R. A. PHILLIPS.

Cork.

Curious Accident to a Sand Martin.

A few weeks ago, when poking about the rocks to the south of Donaghadee, I heard a fluttering as of some bird in difficulties. Following the sound I soon saw on a large rock, facing the sea at an angle of about seventy-five degrees, a bird caught in some way. Making my way to it, I put my hand on the bird, which turned out to be a Sand Martin. One of its feet, which by the way was deformed, and short of a toe, was caught under a limpet, by no means a large one, but all the efforts of the bird were of no avail to free itself, and without doubt it would have been drowned when the tide came in, had I not happened on the spot, forced the limpet off, and let the bird fly away.

HAMILTON MCCLEERY.

Belfast.

Early Arrival of Eider Ducks.

On Saturday, 19th August, 1905, I saw at Cultra Point two ducks which, from their large size, heavy build, peculiar markings, and characteristic shape of bill and head, I am quite sure were Eider Ducks; and subsequent reference to the plate in Dresser confirmed my identification. On consulting that valuable and recent work "The Birds of Ireland," I find Mr. Ussher says—"The Eider Duck appears in Ireland only as a straggler on rare occasions, of which more than thirty records are extant. These come from all sides of the island, but most frequently from the north coast, especially Rathlin Island, where Eiders have been shot on several occasions. It is only surprising that they do not visit it more frequently, as the distance of Rathlin from Islay—where the species breeds and is seen in large flocks—is less than twenty miles. At Rathlin, Eider Ducks have been met with in April and May, and once in September; but the bird is not known to have occurred on the main Irish coast before November, the month in which it most frequently visits this country." Thus the above-noted occurrence in Belfast Lough on 19th August appears to constitute an unusually early record for Ireland. The only previous records from Belfast Lough are one shot off Greencastle in October, 1877, and two shot in February, 1890.

R. LLOYD PATTERSON.

Holywood, Co. Down.

Natterer's Bat in Co. Carlow.

I have to record the capture here, in August last, of a Natterer's Bat, kindly identified for me by Dr. Scharff. As this bat has only been recorded from about six different localities in Ireland its occurrence here is worth noting. I have also taken the Long-eared Bat and the Pipistrelle here at different times.

DENIS R. PACK-BERESFORD

Fenagh House, Bagnalstown.

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Department of Agriculture and Technical Instruction for Ireland.

DUBLIN MUSEUM.

MUSEUM DEMONSTRATIONS, 1905-1906.

Demonstrations or Informal Lectures, intended to direct attention to some of the most interesting parts of the Collections will be given in the Museum during the Winter. The following will be given on Tuesday afternoons and will be followed by others of which due notice will be given.

Dec. 5	Col. G. T. Plunkett, C.B.,	NEW OBJECTS IN THE MUSEUM.
" 12	Mr. Nichols, M.A., M.R.I.A.,	ANIMALS OF THE SEASHORE.
" 19	Mr. Brenan, B.H.A.,	LACE.
Jan. 9	Mr. Halbert,	INSECT ENEMIES OF DOMESTICATED ANIMALS.
" 16	Mr. Alabaster,	JAPANESE BRONZE.
" 23	Professor Cole, F.G.S.,	THE GROWTH OF A MINERAL.
" 30	Mr. Dudley Westropp,	PEWTER.
Feb. 6	Prof. Johnson, D.Sc., F.L.S.,	THE PLANTS IN SHAKESPEARE'S PLAYS.

The Demonstrations will commence at 4.35 p.m., and Visitors are requested to be in the Museum by 4.30 p.m.

Tickets free on application, at the Office in Leinster House, Kildare-street.



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